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THE MODERN DICTIONARY OF ARTS AND SCIENCES;

OR,

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By WILLIAM CASTIEAU,

Teacher of the Mathematics, and Maſter of the Academy, oppoſite Berner's-ſtreet, in Oxford-ſtreet.

The other Articles by Gentlemen particularly converſant in the reſpective Subjects they have undertaken to explain.

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THE MODERN DICTIONARY OF ARTS AND SCIENCES.

☞ *Thoſe Articles which are marked thus * are totally omitted in every other Dictionary of Arts and Sciences.*

K.

K, The tenth letter of the alphabet, and a double conſonant. It is borrowed from the Greek K, Kappa, which was made from the old Hebrew Caph, when reverted. It was but little uſed among the Latins; and Priſcian ſays it was never uſed except in words borrowed from the Greek; we ſeldom indeed find it in Latin authors, except in *kalendæ*. This letter is formed in the voice by a guttural expreſſion of the breath through the mouth, together with a depreſſion of the lower jaw, and opening of the lips and teeth. It has much the ſame ſound as the hard ſound of C, and generally uſed only before i, e, and n, in the beginning of words, where the hard ſound of C is formed, as in *kill*, *ken*, *knave*, &c. K is alſo a numeral letter, denoting 250. When it had a ſtroke at top, it ſtood for 250,000.

KÆMPFERIA, in botany, a genus of plants, the flower of which conſiſts in a ſingle petal, with a long ſlender tube, and the limb is divided into ſix ſegments: the fruit is a roundiſh and ſomewhat trigonal capſule, with three cells, each containing a conſiderable number of ſeeds. The roots of this plant are the galangals of the ſhops. See *Galangals*.

KALI, glaſs-wort; in botany, a plant with ſpreading, reddiſh, pretty thick branches; oblong, narrow, pointed, fleſhy leaves, like thoſe of the houſe-leeks; and imperfect flowers in the boſoms of the leaves, followed each by one ſeed ſpirally curled and incloſed in the cup. It is annual, and grows wild on the ſea-coaſts in the ſouthern parts of Europe, particularly of the Mediterranean. This herb is very juicy, in taſte bitteriſh, and remarkably ſaline. The expreſſed juice, and infuſions or decoctions of the leaves, are ſaid to be powerfully aperient and diuretic; and in this intention have by ſome been greatly recommended in hydropic caſes: half a dram of the juice is reckoned a ſufficient doſe. But the kali is principally regarded on account of its yielding copiouſly, when burnt, the fixed alkaline ſalt called ſoda, or ſouda: an impure ſoda is prepared from it about Montpelier, where the plant is ſaid to be cultivated for this uſe in the ſalt marſhes; and a purer kind at Alicant in Spain, from a ſomewhat different ſpecies of kali. The ſalt called kelp, prepared among ourſelves from different marine plants, contains an alkali of the ſame kind, but more impure. The ſoda is much milder in taſte than the common vegetable alkalies, and is in ſeveral other reſpects alſo very conſiderably different from them, being of the ſame nature with the mineral alkali or baſis of ſea-ſalt. It promiſes to be an uſeful article of the materia medica, and now begins to be introduced into practice in this country, as it has long been among the French. Of the aſhes of kali is made ſoap, glaſs, alkali-ſalt, pot-aſh, &c. See *Soap*, *Glaſs*, &c.

The method of preparing it is as follows: when dry, they burn it in pits, dug in the ground, which are cloſe covered up with earth, ſo that no air can come at the fire: by this means the matter is not only reduced to aſhes, but made into a very hard ſtone, like rock ſalt, which they are forced to break with hammers to get it out. The beſt ſort is in little dry ſtones, of a bluiſh grey colour, and full of little eyes or holes. See *Alcali.*

KAOLIN, the name of one of the two ſubſtances which are the ingredients of China ware. The other, which is called petunſe, is eaſily vitrifiable, and this kaolin is ſcarce at all ſo. Whence the fire compoſes, from a mixture of them both, a ſemi-vitrification, which is china ware.

KEBLA, an appellation given by the Mahometans to that part of the world where the temple of Mecca is ſituated, towards which they are obliged to turn themſelves when they pray.

KEDGE-ANCHOR, among ſailors, a ſmall anchor uſed in harbours and rivers, either to remove the ſhip from one place to another, by the help of certain tranſporting ropes, called warps, or to keep her ſteady as ſhe rides at anchor, eſpecially at the turn of the tide, when ſhe may come ſo nigh as to entangle the flooks of it with her cable, if not kept from it by the kedge.

KEEL, in naval architecture, the principal piece of timber firſt laid upon the blocks, which ſupports the whole fabric of a ſhip in the ſame manner as the back-bone ſuſtains the human body. When this cannot be had of a ſufficient depth in one piece, there is a ſtrong thick plank faſtened to the bottom, called the falſe keel, which alſo ſerves to ſave the bottom of the main keel.

KEEL is alſo a veſſel employed in divers parts of Northumberland to bring coals down the rivers to the ſhips, into which they diſcharge them for tranſportation: theſe veſſels reſemble the coal-barges on the river Thames, but are generally much ſtronger.

KEEPER *of the Foreſt*, an officer having the chief management of every thing belonging to a royal foreſt, as well as the government of all the other officers. See *Foreſt*.

KEEPER *of the Great Seal*, a lord by his office, is ſtiled lord-keeper of the great ſeal of Great Britain, and is always one of the privy council. All grants, charters, and commiſſions of the king under the great ſeal, paſs through the hands of the lord keeper, for without that ſeal, many of thoſe grants, &c. would be of no force, the king being, in the interpretation of the law, a corporation, and therefore paſſes nothing but by the great ſeal, which is alſo ſaid to be the public faith of the kingdom, being in the higheſt eſteem and reputation. Whenever there is a lord-keeper, he is inveſted with the ſame place, authority, preheminence, juriſdiction, or execution of laws, as the lord chancellor of Great Britain is veſted with.

KEEPER *of the Privy Seal* is alſo a lord by his office, through whoſe hands all grants, pardons, &c. paſs before they come to the great ſeal; and even ſome things paſs this officer's hands which do not paſs the great ſeal. This officer is likewiſe one of the privy council, yet was anciently called clerk of the privy ſeal. His duty is to put the ſeal to no grant, &c. without a proper warrant, nor with warrant where it is againſt law, or inconvenient, but ſhall firſt acquaint the king therewith.

KELP, a fixed ſalt, or particular ſpecies of pot-aſh, procured by burning the weed kali. See *Kali.*

* KENDALL, a market-town of Weſtmoreland, with a market on Saturdays, and two fairs, on May 6, for horned cattle, and November 8, for horned cattle, horſes, and ſheep. It is ſo called from its ſituation on the river Can, or Ken, and is a large town, well-built and populous, driving a conſiderable trade in the woollen manufacture. It had formerly a ſtrong caſtle, parts of whoſe walls are yet ſtanding. It has now a large church, and twelve chapels of eaſe. It was made a corporation firſt by queen Elizabeth, and afterwards by king James I. It conſiſts of a mayor, twelve aldermen, twelve common council-men, and a recorder. Here is a good free-ſchool, well endowed, with exhibitions to Queen's college, Oxford. This town is built in form of a croſs, having two chief ſtreets, or rather four, which meet at the middle of the town, placed at right angles. The tradeſmen are divided into companies, namely, the mercers, ſheermen, cordwainers, tanners, glovers, taylors, pewterers, &c. each of which have a place to meet in, to tranſact what relates to each particular company. It is ſixty-ſix miles ſouth-ſouth-eaſt of Carliſle, twenty-four north-north-weſt of

Lancaſter, and two hundred and fifty-ſix on the ſame point from London. Long. 2. 40. W. Lat. 54. 15. N.

KENT (the county of) by the Romans called *Cantium*, is bounded on the eaſt and part of the ſouth by the ſea, and on the other part by the county of Suſſex, on the weſt by part of Surry, and on the north by the river Thames, all but a ſmall part on the other ſide of that river oppoſite to Woolwich. It is in length fifty miles, and in breadth twenty-eight, and contains thirty-nine thouſand two hundred and forty-two houſes, four hundred and eight pariſhes, and thirty conſiderable towns. That part of the county lying upon the ſea is not ſo healthy, nor has ſo good an air as the more diſtant parts, the inhabitants being very ſubject to agues. The ſoil is generally pretty rich and fruitful, but not ſo much near the Thames as the other parts. With regard to its productions, it differs little from other counties, though they have parks of fallow deer, and warrens of grey rabbits, but no red deer and black rabbits. They have no advantageous mineral except iron; but they have quarries of paving ſtone, and pits of marl and chalk. Beſides the Thames, which bounds the county, they have ſeveral rivers and pleaſant ſtreams, particularly the Medway, the Derwent, and the Stour, which ſupply the inhabitants with plenty of fiſh and very fine oyſters. Near Folkſtone, upon the cliffs, there are very odd ſtones, ſome of which reſemble a muſcle, ſome a cockle, an almond, a ſcrew, cock-ſpurs, and quills, which laſt are as tranſparent as amber; likewiſe there are ſome that reſemble ſnakes, and have marks like ſpines and ribs. From this place to Dover there is a continual chain of chalky hills, for ſix miles together, among which is a cataract of water, which falls down from the cliffs, and is uſually called the Liddal Spouts. Among theſe cliffs grows abundance of ſamphire, which is pretty much uſed as a ſallad. The towns that ſend members to parliament, beſides the county, are Canterbury, Rocheſter, Maidſtone, and Queenſborough.

KERMES, round reddiſh brown grains, about the ſize of peas; found in Spain, Italy, and the ſouthern parts of France, adhering to the branches of the ſcarlet oak. Theſe grains appear, when freſh, full of minute reddiſh ova or animalcules, of which they are the nidus, and which in long keeping change to a browniſh red powdery ſubſtance. They are cured by ſprinkling with vinegar before exſiccation: this prevents the excluſion of the ova, and kills ſuch of the animals as are already hatched; which would otherwiſe become winged inſects, and leave the grain an empty huſk. French kermes yields upon expreſſion a red juice, of a light pleaſant ſmell, and a bitteriſh, ſubaſtringent, ſomewhat pungent taſte: the juice or ſyrup made from it are brought from the ſouth of France, and ſometimes made uſe of as mild reſtringents and corroborants. An elegant cordial confection, for theſe intentions, is prepared in the ſhops, by diſſolving in the heat of a water bath, ſix ounces of fine ſugar in ſix ounces by meaſure of damaſk roſe water, then adding three pounds of the juice of kermes, warmed and ſtrained, and after the whole has grown cold, mixing in half a ſcruple of oil of cinnamon: this confection is taken from a ſcruple to a dram, or more, either by itſelf or in juleps, with which it mingles uniformly, without injuring their tranſparency.

KERMES MINERAL. The kermes mineral was a preparation of Glauber, which the king of France bought of Mr. de la Ligerie, and made public in 1720. Half a grain, or a grain of this powder, given every three or four hours, produces no violent effects; but, by increaſing the doſe, it may be made to vomit, purge, and ſweat. Some commend this medicine as the moſt univerſal reſolvent and deobſtruent; aſſuring us, that it almoſt infallibly cures pleureſies, peripneumonies, aſthmas, catarrhs, anginæ, ſmall-pox, and many other diſeaſes. Others are as poſitive, that it heats and thickens the blood, thereby increaſing obſtructions, and is particularly hurtful in all inflammatory diſeaſes.

KESTRIL, or KASTRIL, in ornithology, the yellow legged falcon, with a brown back, a ſpotted breaſt, and a rounded tail, with a broad black faſcia towards the end. It is a very beautiful bird, about the ſize of a pigeon, and very bold. It is known, among authors, by the names of tinnunculus and cenchris; and is alſo called in Engliſh, the ſtannel or windhover.

KETCH, in the marine, a veſſel with two maſts, viz. a main and mizen maſt. The principal uſe of this ſort of ſhips is to bombard a place, being properly furniſhed with mortars, bombs, carcaſſes, &c. for this employment, and built remarkably ſtrong to encounter the ſhock of firing ſhells for a continuance.

KETTLE-DRUMS, in the art of war. See *Drum*.

KEY, *Claves*, a well known inſtrument for opening and ſhutting the locks of doors, cheſts, bureaus, and the like. The names of the ſeveral parts of a key are theſe: A (plate XXV. fig. 2.) is the pin-hole, drilled into the end of the ſhank H; B is the ſtep, or dap-ward; C, the hook-ward; D, the midddle ward; E E, the croſs-ward; F, the main ward; G G, croſs-ward; I, the pot; K, the bow-ward; L, the bow, or handle; and B F E D, &c. the piece of ſteel, containing the wards, is called the bit of the key.

KEY, in muſic, a certain fundamental note, or tone, to which the whole piece, be it in concerto, ſonato, cantata, &c is accommodated, and with which it uſually begins, but always ends.

KEY is alſo uſed for an index, or explanation of a cipher.

KEYS likewiſe denote thoſe little pieces in the fore-part of an organ, ſpinnet, or harpſicord, whereby the jacks are played, ſo as to ſtrike the ſtrings of the inſtrument, and wind is given to the pipes by raiſing and ſinking the ſucker of the ſound-board.

KEY-STONE *of an Arch, or Vault*, that placed at the top or vertex of an arch, to bind the two ſweeps together.

KIDNIES, *Renes*, in anatomy, two pretty ſolid, glandular bodies, ſituated in the poſterior part of the cavity of the abdomen, on each ſide of the lumbar vertebræ, between the laſt falſe ribs and oſſa ilium. The right kidney lies under the great lobe of the liver, and is conſequently lower than the left, which lies under the ſpleen. The figure of the kidney reſembles that of a large bean, being convex on one ſide, and concave on the other; the concave ſide is turned to the vertebræ, and the convex the oppoſite way. Their length anſwers to the diſtance between the laſt falſe rib and os ilium; they are about half as broad as long, and half as thick as broad.

KILDERKIN, a liquid meaſure containing two firkins.

KINDRED, in law, perſons related to others, whereof the law of England reckons three degrees or lines, viz. the deſcending, aſcending, and collateral line. On there being no kindred in the deſcending line, the inheritance paſſes to the collateral one.

KING, in the general acceptation of the word, a perſon who has a ſupreme authority, with the power of levying taxes, making laws, and enforcing an obedience to them: but in England, which is a limited monarchy, the power of the king is greatly reſtrained; which is ſo far from diminiſhing his honour, that it adds a glory to his crown; for while other kings are abſolute monarchs over innumerable multitudes of ſlaves, the king of England has the diſtinguiſhed glory of governing a free people, the leaſt of whom is protected by the laws: he has great prerogatives, and an unlimited power in doing good; and is at the ſame time only reſtrained from acting inconſiſtently with his own happineſs, and that of his people. He has all the enſigns of royalty, and all the marks of ſovereignty: but while he has the power of making treaties, of ſending and receiving ambaſſadors, of conferring titles, creating privy counſellors, officers of ſtate, and judges, may raiſe men and arms both for ſea and land, he cannot force his ſubjects to maintain them, or raiſe one tax by his ſole authority: he has the privilege of coining money, but he cannot force the meaneſt ſubject to part with his property; he can pardon a criminal, but he cannot put a ſubject to death till he is condemned by his peers: he may at his pleaſure call, continue, prorogue, and diſſolve parliaments, and without his royal aſſent no bill in parliament can paſs into a law; yet he can neither act contrary to law, nor make new laws by his ſole authority; on the contrary, he may even be ſued and caſt in his own courts.

KING's BENCH, a court held in Weſtminſter-hall, ſo called, becauſe the king is ſuppoſed to ſit in perſon as judge of the court, and may do ſo whenever he pleaſes; wherefore all writs, &c. in this court are made returnable *coram nobis*, and not *coram juſticiariis noſtris*, as in the Common Pleas. The judges are the lord chief juſtice, and three other puiſne juſtices. Here are principally determined matters relating to the crown and the peace. When any are aggrieved by an order of juſtices or quarter ſeſſions, they have recourſe hither: the rights of election of mayors, bailiffs, conſtables, &c. are, upon mandamus's, ſettled here, and prohibitions iſſued to ſtay proceedings in the eccleſiaſtical, admiralty, or other inferior court. Here any debt or contract may be ſued for, as well as in any other court.

Books of KINGS, two canonical books of the Old Teſtament, ſo called becauſe they contain the hiſtory of the kings of Iſrael and Judah, from the beginning of the reign of Solomon down to the Babyloniſh captivity, for the ſpace of near ſix hundred years. The firſt book of Kings contains the latter part of the life of David, and his death; the flouriſhing ſtate of the Iſraelites under Solomon, his building and dedicating the temple of Jeruſalem, his ſhameful defection from the true religion, and the ſudden decay of the Jewiſh nation after his death, when it was divided into two kingdoms: the reſt of the book is taken up in relating the acts of four kings of Judah, and eight of Iſrael. The ſecond book, which is a continuation of the ſame hiſtory, is a relation of the memorable acts of ſixteen kings of Judah, and twelve of Iſrael, and the end of both kingdoms, by the carrying of the ten tribes captive into Aſſyria by Salmanaſer and the other two into Babylon by Nebuchadnezzar. It is probable that theſe books were compoſed by Ezra, who extracted them out of the public records which were kept of what paſſed in that nation.

KING'S FISHER, *Iſpida*, in ornithology.

* KING's SPEECH, the firſt that was delivered was in 1107, by Henry I.

KIRK, a Saxon term, ſignifying the ſame with church.

KIRK-SESSIONS, an inferior church-judicatory, in Scotland, conſiſting of the miniſters, elders, and deacons of a pariſh.

KITCHEN-GARDEN, a piece of ground laid out for the cultivation of fruit, herbs, pulſe, and other vegetables uſed in the kitchen. A kitchen-garden ought to be ſituated on one ſide of the houſe, near the ſtables, from whence the dung may be eaſily conveyed into it; and after having built the walls, borders ſhould be made under them, which, according to Miller, ought to be eight or ten feet broad: upon thoſe borders expoſed to the ſouth, many ſorts of early plants may be ſown; and upon thoſe expoſed to the north, you may have ſome late crops, taking care not to plant any ſort of deep-rooting plants, eſpecially beans and peas, too near the fruit-trees. You ſhould next proceed to divide the ground into quarters; the beſt figures for theſe is a ſquare, or an oblong, if the ground will admit of it; otherwiſe they may be of that ſhape which will be moſt advantageous to the ground; the ſize of theſe quarters ſhould be proportioned to that of the garden; if they are too ſmall, your ground will be loſt in walks, and the quarters being incloſed by eſpaliers of fruit-trees, the plants will draw up ſlender, for want of a more open expoſure. The walks ſhould alſo be proportioned to the ſize of the ground; theſe in a ſmall garden ſhould be ſix feet broad, but in a larger one ten; and on each ſide of the walk there ſhould be allowed a border three or four feet wide, between it and the eſpalier, and in theſe borders may be ſown ſome ſmall ſallads, or any other herbs that do not take deep root, or continue long: but theſe quarters ſhould not be ſown or planted with the ſame crop two years together. In one of theſe quarters, ſituated neareſt to the ſtables, and beſt defended from the cold winds, ſhould be the hot-beds, for early cucumbers, melons, &c. and to theſe there ſhould be a paſſage from the ſtables, and a gate through which a ſmall cart may enter. The moſt important points of general culture conſiſt in well digging and manuring the ſoil, giving a proper diſtance to each plant, according to their differerent growths, as alſo in keeping them clear from weeds; for this purpoſe you ſhould always obſerve to keep your dung-hills clear from them; if this is not done, their ſeeds will be conſtantly brought in, and ſpread with the dung.

KNAVE, in old law books, an appellation given to a man ſervant, or even to a male child.

KNEE, *Genu*, in anatomy, the articulation of the thigh and leg bones.

KNEE *of the Head*, in ſhip-building, a large piece of timber fayed and bolted to the ſtem, on which the figure or image of the head reſts. This is commonly called cut-water by ſeamen.

KNEES, in ſhip-building, certain crooked pieces of timber, one leg or arm of which is bolted to the beams, and the other to the ſhip's ſide.

KNIGHT, *Eques*, among the Romans, a perſon of the ſecond degree of nobility, following immediately that of the ſenators.

KNIGHT a perſon who, on account of ſome martial feat, or notable action, is by the king raiſed to a rank above a gentleman. The original High Dutch word *knecht*, ſignifies a ſervant, as we find is ſtill meant by knight of the ſhire; and afterwards it denoted a military man, or horſeman, as being uſually employed on horſeback. In our common law, they are called *milites*, as commonly holding lands in knight-ſervice to ſerve the king in his wars.

KNIGHT, a perſon admitted into any order, with certain marks of diſtinction, as the knights of the garter, of the Bath, of the elephant, of the thiſtle, of the Holy Ghoſt, Malta, &c.

KNIGHTS-ERRANT, a pretended order of chivalry, much talked of in old romances, being a kind of heroes that travelled in ſearch of adventures, redreſſing wrongs, reſcuing damſels, and taking all occaſions of ſignalizing their proweſs. Of this kind of knights was Don Quixote, the hero of a celebrated romance, known by that name. This romantic bravery of the old knights was heretofore the chimera of the Spaniards.

KNIGHTS *of the Shire* or KNIGHTS *of Parliament*, in the Britiſh polity, are two knights or gentlemen of eſtate, who are elected, on the king's writ, by the freeholders of every county, except in Wales, to repreſent them in parliament.

The qualifications of a knight of the ſhire, is to be poſſeſſed of 600 l. per ann. in a freehold eſtate. Their expences during their ſitting, were, by a ſtatute of Henry VIII. to be defrayed by the county; but this is now ſcarce ever required.

* KNIGHTHOOD, was firſt inſtituted in England in the year 540.

KNIGHT-MARSHAL, an officer in the king's houſehold, who has juriſdiction and cognizance of any tranſgreſſion within the king's houſehold and verge; as alſo of contracts made there, whereof one of the houſe is party.

KNOTTING, among ſailors, untwiſting the ends of a rope, and interweaving them curiouſly amongſt each other, ſo as to form knots of various ſhapes; amongſt which they number the diamond-knot, the wall-knot, or walnut, the roſe-knot, bowline-knot, double diamond-knot, &c.

KNOWLEDGE, according to Mr. Locke, conſiſts in the perception of the connection and agreement, or diſagreement and repugnancy of our ideas: and ſo it ſtands contradiſtinguiſhed from ignorance. Whatever comes ſhort of intuition and demonſtration, is but faith or opinion, not knowledge. As we are invincibly conſcious to ourſelves of a different perception, when we look on the ſun in the day, and think on it by night, we may add to the two former ſorts of knowledge this alſo of the exiſtence of particular external objects by that conſciouſneſs we have of the actual entrance of ideas from them; ſo that there is a third degree of knowledge, which may be called ſenſitive.

Extent and Limits of Human KNOWLEDGE. 1. It is evident that we can have no knowledge farther than we have perception of the agreement or diſagreement of our ideas, whether by intuition, demonſtration, or ſenſation. 2. We cannot have an intuitive knowledge that ſhall extend itſelf to all our ideas and all that we know about them, becauſe we cannot examine and perceive all the relations they have to each other; thus we cannot intuitively perceive the equality of two extenſions, the difference of whoſe figures makes their parts incapable of an exact immediate application. 3. Demonſtrative knowledge cannot reach to the whole extent of our ideas, becauſe we cannot always find ſuch proofs as will connect them together, with an intuitive knowledge in all the parts of the deduction. Thus, though we have the ideas of a ſquare, a circle, and equality, yet we, perhaps, ſhall never be able to find a ſquare exactly to a circle. The affirmations, or negations we make concerning the ideas we have, being reduced by Mr. Locke to theſe four, viz. identity, co-exiſtence, relation, and real exiſtence, he examines how far our knowledge extends to each of theſe.

1. As to identity and diverſity, our intuitive knowledge is ſo far extended as our ideas themſelves, and there can be no idea in the mind which it does not preſently, by an intuitive knowledge, perceive to be what it is, and to be different from any other.

2. As to the agreement or diſagreement of our ideas of co-exiſtence, our knowledge herein is very defective, though the greateſt and moſt material part of our knowledge concerning ſubſtances conſiſts in it.

As to the powers of ſubſtances, which make a great part of our enquiries about them, our knowledge reaches little further than experience, becauſe they conſiſt in a texture and motion of parts which we cannot by any means come to diſcover.

3. As to the third ſort, the agreement or diſagreement of our ideas in any other relation; this is the largeſt field of knowledge, and it is hard to determine how far it may extend. This part depending on our ſagacity in finding intermediate ideas, that may ſhew the habitudes and relations of ideas, it is difficult to tell when we are at an end in ſuch diſcoveries.

4. As to the fourth part of knowledge, viz. of the real actual exiſtence of things, we have an intuitive knowledge of our own exiſtence, a demonſtrative knowledge of the exiſtence of God, and a ſen-

ſitive knowledge of the objects that preſent themſelves to our ſenſes. See the article *Exiſtence.*

Reality of Human KNOWLEDGE. It is evident, ſays Mr. Locke, that the mind knows not things immediately, but by the intervention of the ideas it has of them. Our knowledge therefore is real only ſo far as there is a conformity between our ideas and the reality of things. But how ſhall we know when our ideas agree with things themſelves? It is anſwered, there are two ſorts of ideas that we may be aſſured agree with things: theſe are,

1. Simple ideas; which, ſince the mind can by no means make to itſelf, muſt be the effect of things operating upon the mind in a natural way, and producing therein thoſe perceptions which, by the will of our Maker, they are ordained and adapted to. Hence it follows, that ſimple ideas are not fictions of our fancies, but the natural and regular productions of things without us really operating upon us, which carry with them all the conformity our ſtate requires, which is to repreſent things under thoſe appearances they are fitted to produce in us. Thus the idea of whiteneſs, as it is in the mind, exactly anſwers to that power which is in any body to produce it there. And this conformity between our ſimple ideas and the exiſtence of things, is ſufficient for real knowledge. See *Idea.*

2. All our complex ideas, except only thoſe of ſubſtances, being archetypes of the mind's own making, and not referred to the exiſtence of things as to their originals, cannot want any conformity neceſſary to real knowledge.

3. But the complex ideas which we refer to archetypes without us, may differ from them, and ſo our knowledge about them may come ſhort of being real, and ſuch as are our ideas of ſubſtances. Theſe muſt be taken from ſomething that does or has exiſted, and not be made up of ideas arbitrarily put together, without any real pattern. Herein, therefore, is founded the reality of our knowledge concerning ſubſtances, that all our complex ideas of them muſt be ſuch, and ſuch only, as are made up of ſingle ones, as have been diſcovered to co-exiſt in nature; and our ideas being thus true, though not perhaps very exact copies, are the ſubjects of real knowledge of them. Whatever ideas we have, the agreement we find they have with others, will be knowledge: if thoſe ideas be abſtract, it will be general knowledge; but to make it real concerning ſubſtances, it muſt be taken from the real exiſtence of things: wherever therefore, we perceive the agreement or diſagreement of our ideas, there is certain knowledge, and wherever we are ſure theſe ideas agree with the reality of things, there is certain real knowledge.

Improvement of Human KNOWLEDGE. The way to improve in knowledge, is not to ſwallow principles with an implicit faith, and without an examination, which would be apt to miſlead men, inſtead of guiding them into truth; but to get and fix in our minds clear and complete ideas, as far as they are to be had, and annex to them proper and conſtant names, and thus barely by conſidering our ideas, and comparing them together, and obſerving their agreement or diſagreement, their habitudes and relations, we ſhall get more true and clear knowledge by the conduct of this one rule, than by taking up principles, and thereby putting the mind into the diſpoſal of others.

We muſt therefore, if we proceed as reaſon adviſes, adapt our methods of enquiry to the nature of the ideas we examine, and the truth we ſearch after. General and certain truths are only founded in the habitudes and relations of abſtract ideas; therefore a ſagacious methodical application of our thoughts, for the finding out theſe relations, is the only way to diſcover all that can with truth and certainty be put into general propoſitions. By what ſteps we are to proceed in theſe, is to be learned in the ſchools of the mathematicians, who from very plain and eaſy beginnings, by gentle degrees, and a continued chain of reaſonings, proceed to the diſcovery and demonſtration of truths, that appear at firſt ſight above human capacity. This may reaſonably be ſaid, that if other ideas, that are real as well as nominal eſſences of their ſpecies, were purſued in the way familiar to mathematicians, they would carry our thoughts farther, and with greater evidence and clearneſs, than probably we are apt to imagine.

In our knowledge of ſubſtances, we are to proceed in quite a different method; the bare contemplation of their abſtract ideas, which are but nominal eſſences, will carry us but a very little way in the ſearch of truth and certainty: here experience muſt teach us what reaſon cannot; and it is by trying alone that we can certainly know what other qualities co-exiſt with thoſe of our complex idea; for inſtance, whether that yellow, heavy, fuſible body we call gold, be malleable or not, which experience, however it prove in that particular body we examine, makes us not certain that it is ſo in all or any other yellow, heavy, fuſible bodies, but that which we have tried; becauſe it is no conſequence, one way or other, from our complex idea. As far as our experience reaches, we may have certain knowledge, and no farther. It is not denied, but that a man, accuſtomed to rational and regular experiments, ſhall be able to ſee farther into the nature of bodies, and their unknown properties, than one that is a ſtranger to them; but this is only judgment and opinion, not knowledge and certainty. This makes our author ſuſpect that natural philoſophy is not capable of being made a ſcience from experiments and hiſtorical obſervations: we may draw advantages of eaſe and health, and thereby increaſe our ſtock of conveniencies for this life; but beyond this, he fears, our talents do not reach, and gueſſes that our faculties are not able to advance farther. See *Experimental Philoſophy*.

* KNOX (JOHN) a celebrated miniſter of Scotland, and one of the chief inſtruments of the reformation in his own country. He had been the diſciple of John Major, doctor of the Sorbonne, and one of the moſt acute ſchoolmen of thoſe times; but having diſcovered a vaſt number of errors, and publiſhed a confeſſion of faith, which made him paſs for an heretic, he was impriſoned, and would have loſt his life at the place of execution, had he not been ſo happy as to make his eſcape, and fly into England, where he was ſo much eſteemed by king Edward, that he might have been promoted to a biſhopric, but he refuſed it with indignation, alledging that the pomp of epiſcopacy was nothing to the goſpel. After the death of that prince, he retired to Frankfort, and afterwards to Geneva, where he contracted a ſtrict friendſhip with Calvin. In 1559 he returned to Scotland, and laboured with extraordinary zeal to eſtabliſh there the doctrine of the proteſtants, by his preaching and writings, and died on the 24th of November, 1572, in the ſixty-ſeventh year of his age. His Hiſtory of the Reformation, was printed with his other works at Edinburgh, in 1732, in folio. By an unwearied application to ſtudy and to buſineſs, as well as by the frequency and fervour of his public diſcourſes, he had worn out a conſtitution naturally ſtrong. During a lingering illneſs, he diſcovered the utmoſt fortitude; and met the approach of death with a magnanimity inſeparable from his character. He was conſtantly employed in acts of devotion, and comforted himſelf with thoſe proſpects of immortality, which not only preſerve good men from deſponding, but fill them with exultation in their laſt moments. The earl of Morton, who was preſent at his funeral, pronounced his eulogium in a few words, the more honourable for Knox, as they came from one, whom he had often cenſured with peculiar ſeverity. "Here lies he, who never feared the face of man."

KORAN, or ALCORAN. See *Alcoran*.

* KOULI KHAN (THAMAS) or Nadir Schah, tyrant of Perſia, was born in the province of Chorazan, in Perſia, in the year 1687. His father, who was a ſhepherd, bred him to the ſame employment; but being ſoon weary of that humble and honeſt ſituation, he ſtole 700 of his father's ſheep, ſold them at Meſched, and then aſſembled a number of lawleſs fellows, put himſelf at their head, and began to rob caravans. This method of life he continued ſeven years, and acquiring great riches by his robberies, had under his command 6000 reſolute villains, well armed, well diſciplined and practiſed to ſlaughter. Having thus rendered himſelf extremely formidable, he offered his ſervices to Schah Thamas, whoſe throne was then filled by Eſchref, an uſurper, propoſing to deliver his country from the Aghwans, who had, during five years, lorded it over the Perſians with the utmoſt barbarity. When Thamas giving him the command of his army, he entirely defeated the numerous forces of Eſchref; conducted the Schah Thamas in triumph to Iſpahan, and placed him on the throne of his anceſtors. Mean while, Eſchref having got together all his treaſures and his women, Nadir, at the head of 15,000 men, went in purſuit of him, having firſt adviſed his prince to march againſt the Turks with the reſt of the army, promiſing that as ſoon as he had ſecured Eſchref, he would come to his aſſiſtance. He at length came up with the Aghwans, great part of whom were ſoon cut to pieces, and the reſt taken

ken priſoners; among the latter was Eſchref, whoſe treaſures fell into the hands of the victor. He ordered the eyes of the uſurper to be put out, and ſome days after cauſed him to be beheaded. The money, which amounted to ſix millions in ſpecie, he diſtributed among the ſoldiers, and thus by his liberality ſecured their affections; but the jewels, which were of ineſtimable value, he took to himſelf. He then reduced the province of Candahar, obliged the Great Mogul to reſtore what he had taken during the troubles of Perſia, and then haſtened back to ſuccour his prince, whom he ſuppoſed to be engaged with the Turks; but on his approaching Iſpahan, he was ſurprized to find that he had concluded a peace with the Porte, diſbanded his army, and ſent him orders to do ſo too. Filled with indignation, he exclaimed againſt the ignominious peace, and the effeminacy of his prince, and inſtead of diſbanding his army, which now amounted to 70,000 men, he marched to Iſpahan, ſeized the Schah Thamas, whom he impriſoned in a ſtrong fortreſs, and in an aſſembly of the chiefs of Perſia got him depoſed, and his ſon, an infant only ſix months old, was proclaimed king, by the name of Schah Abbas III. In the name of this infant, Nadir aſſumed the ſovereign power, and iſſuing a manifeſto, in which he diſclaimed the late peace with the Turks, marched towards the frontiers of Turky. This war continued three years, in which he diſplayed the greateſt military talents, and obtained the moſt ſignal victories, and recovered all that had been taken from Perſia. He then, in 1736, concluded a peace with the Ottoman Porte, and the young Schah Abbas dying the next year, he reſolved to aſcend the throne. He therefore aſſembled the chief men of the kingdom, and before them enumerated the great ſervices he had done to his country; and adding that he deſigned to reſign the regency, and to ſpend the remainder of his days in retirement, recommended to them to chooſe a new Schah or king. He then retired, when ſome of his creatures propoſed their petitioning him to accept the Perſian diadem, which was readily agreed to, as they were ſurrounded by an army of 100,000 men, entirely devoted to their general: not the leaſt objection was offered, except by the high-prieſt, who was ſoon ſilenced by the bow-ſtring; and the next day Nadir was proclaimed Schah with all teſtimonies of public joy. He immediately marched with his victorious army againſt the Mogul, and in one ſingle battle conquered almoſt his whole empire. In this expedition his army ſlew above 200,000 men, and brought away a treaſure worth above 2,400,000 l. among which was the imperial throne, ſet with diamonds of immenſe value. He now reſolved to chaſtize the Uſbec Tartars, who, during all his wars, had been his ſecret enemies. He twice defeated them, took Buchara, their capital, by ſtorm, and conquered the whole country. Thus, by taking from the Mogul all the country between the former limits of Perſia and the river Indus, and by ſubduing Uſbec Tartary, he greatly enlarged the bounds of his empire. He now fell into a ſtate which bordered on diſtraction, he endeavoured to change the religion of Perſia to that of Omar, hanged the chief-prieſts, put his own ſon to death, and was guilty of innumerable acts of wanton cruelty; but was at length aſſaſſinated in 1747. in the 60th year of his age, after having reigned above twenty years.

KUTUCHTA, among the Calmuc Tartars, the name of their high-prieſt, or ſovereign pontiff.

L

L, A ſemi-vowel, or liquid, being the eleventh letter in the alphabet.

It was derived from the old Hebrew Lamed, or Greek Lambda λ. In Engliſh words of one ſyllable it is doubled at the end, as *ſwell*, *tell*, *bell*, *knell*, &c. but in words of more ſyllables than one it is ſingle at the end, as *evil*, *general*, *conſtitutional*, &c. It is placed after moſt of the conſonants in the beginning of words and ſyllables, as *clack*, *glare*, *ad-le*, *ea-gle* &c. but before none. Its ſound is clear in *Abel*, but obſcure in *able*, &c.

L, among the ancients, was a numeral letter, and is ſtill ſo in the Roman cyphering, and denotes fifty. When a line was written at top $\overline{\text{L}}$, it ſtood for 50,000.

LABARUM, in Roman antiquity, the ſtandard borne before the Roman emperors: being a rich purple ſtreamer, ſupported by a ſpear.

LABDANUM, or LADANUM, a reſinous juice, exuding upon the leaves of a ſmall ſhrub which grows plentifully in Candia, and ſome of the other iſlands of the Archipelago. The ſhrub is ſaid to be very plentiful alſo in Spain, but it does not appear that any labdanum is brought from thence. Two ſorts of this reſin are met with in the ſhops. The beſt, though very rare, is in dark coloured black maſſes, of the conſiſtence of a ſoft plaſter, growing ſtill ſofter on being handled: the other is in long rolls coiled up, much harder than the preceding, and not ſo dark. The firſt has commonly a ſmall, and the laſt a very large admixture of fine ſand, which in the labdanum examined by the French academy, amounted to three fourths of the maſs. It is ſcarcely indeed to be collected pure, independently of deſigned abuſes; the duſt blown on the plant by winds from the looſe ſands among which it grows being retained by the tenacious juice. Labdanum has been ſometimes exhibited as a reſinous corroborant and reſtringent, but principally employed in external applications and perfumes: the ſoft kind makes an uſeful ingredient in the cephalic and ſtomachic plaſters of the ſhops. This ſort has a very agreeadle ſmell, and a lightly pungent bitteriſh taſte: the hard is much weaker; and the common means of purifying theſe kinds of ſubſtances, though they ſeparate the ſandy matter mixed with it, render it weaker ſtill.

LABEL, in heraldry, a fillet generally placed in the middle, along the chief of the coat, without touching its extremities. Its breadth ought to be a ninth part of the chief. It is adorned with pendants; and when there are above three of theſe, the number muſt be ſpecified in blazoning. This is a kind of addition to the arms of a ſecond brother, to diſtinguiſh him from the firſt, and is eſteemed the moſt honourable of all differences.

LABEL, in law, a narrow ſlip of parchment hanging from a deed, or other writing, to hold the appending ſeal.

LABEL *of a Circumferentor*, a long thin braſs ruler, with a ſight at one end, and a center-hole at the other; chiefly uſed with a tangent line, to take altitudes.

LABIAL LETTERS, thoſe pronounced chiefly by means of the lips.

LABIATED FLOWERS, monopetalous flowers, conſiſting of a narrow tube, with a wide mouth, divided into two or more lips.

LABORATORY, or ELABORATORY. See *Elaboratory*.

LABOUR, a cloſe application to work or buſineſs. Among ſeamen, a ſhip is ſaid to be in labour, when ſhe rolls and tumbles very much, either a hull, under ſail, or at anchor. It is alſo ſpoken of a woman in travail, or child-birth.

LABOURING, in the marine, a violent rolling or pitching, ſo as to endanger the maſts and hull, by carrying away or ſpringing the former, and ſtraining the latter, ſo as to occaſion a leak or other diſaſter.

* LABRADOR, called alſo New Brittain and Esquimaux, a country in North America, between fifty and ſixty-four degrees of north latitude, bounded by Hudſon's Streights and the North Sea on the north, by the ſame ſea on the eaſt, by the river of St. Lawrence and Canada on the ſouth, and by Hudſon's Bay on the weſt. It is inhabited in the winter by a people called the Eſquimaux, though in the ſummer time they

make an excurſion from hence to the ſea coaſts of Newfoundland, and have been ſeen as far as Nelſon's river, which riſes in the weſt, and falls into Hudſon's bay. Theſe people are properly ſavages, for they eat raw fleſh, and have a thick beard which covers their faces up to their eyes, inſomuch that their features can hardly be diſcovered; their hair is generally black and rugged, their eyes little and wild, and their whole external appearance frightful and ugly. They are tall and pretty well ſhaped; however, it appears from their whole aſpect, that they are of a different original from the other Americans. They are ſo well cloathed, that there is nothing to be ſeen but part of their faces and their fingers ends; their inward garment is a ſort of ſhirt, made of bladders, or the guts of fiſhes, cut in pieces and ſewed together; over this they have a kind of looſe coat, made of a bear ſkin, or of ſome other wild beaſt, and ſometimes thoſe of birds; they have a hood of the ſame ſtuff as the ſhirt, and faſtened to it: the ſhirt reaches no lower than the hip, but the coat falls down behind as far as their thighs, and before a little below their girdles; that of the women deſcends as low as the mid leg, and is faſtened with a girdle, from which hang a great many little bones; the men have breeches of ſkins, with the hair inward, and on the outſide they are covered with the ſkins of ſmall animals; on the feet they have ſandals, with the hair on the inſide, over which they have boots, with the fur diſpoſed in the ſame manner; then another pair of ſandals, which are ſometimes tripled and quadrupled: however this dreſs does not prevent them from being very ſwift of foot. Their arrows, which are their only weapons, are pointed with the teeth of ſea-cows, or with iron, when they can get it; in the ſummer they are always abroad in the open air; but in the winter they lodge in holes made in the earth. It was never poſſible to civilize any of them, for they will not come near the Europeans, nor eat any thing which comes from them.

LABYRINTH, in anatomy, the internal cavity of the ear, ſo called from its ſinuoſities and windings.

LABYRINTH, in gardening, a winding, mazy, and intricate turning to and fro, through a wilderneſs, or a wood. The deſign of a labyrinth is, to cauſe an intricate and difficult labour to find out the center; and the aim is, to make the walks ſo intricate, that a perſon may loſe himſelf in them, and meet with as great a number of ſtops and diſappointments as poſſible, they being the moſt valuable that are moſt intricate. As to the contrivance of them, it will not be poſſible to give directions in words: there are ſeveral plans and deſigns in books of gardening: they are rarely met with but in great and noble gardens, as Hampton Court, &c.

LACCA, LAC, or STICK-LACK, improperly called gum-lac, in natural hiſtory, a concrete brittle ſubſtance, of a dark red colour; brought from the Eaſt Indies incruſted on pieces of ſticks; internally divided into ſeveral cells: ſaid to be the reſinous juice of certain trees, collected by winged red inſects of the ant kind, impregnated with the tinging matter of the inſects, and by them depoſited either on the branches of the trees, or on ſticks faſtened in the earth for that purpoſe. In the cells are often obſerved ſmall red bodies, which appear to be the young inſects. The tinging red animal matter of the ſtick-lac diſſolves both in water and in rectified ſpirit, and appears to be of the ſame general nature with that of cochineal; like which it is made dull by alkalies, and brighter by acids, and turned to a ſcarlet by a ſolution of tin.

A ſpirituous tincture of ſtick-lac has been ſometimes given as a mild reſtringent and corroborant, in female weakneſſes, and in rheumatic and ſcorbutic diſorders. But the principal medicinal uſe of this concrete is as a topical corroborant and antiſceptic, in laxities and ſcorbutic bleedings and exulcerations of the gums; ſome employ for this purpoſe a tincture of the lac in alum water; others, a tincture made in vinous ſpirits impregnated with the pungent antiſcorbutics: an ounce of the powdered lac, with half an ounce of the powdered myrrh, is by the college of Edinburgh directed to be digeſted in a ſand heat for ſix days, in a pint and a half of ſpirit of ſcurvy-graſs.

Artificial LACCA, or LAKE, in painting, a white earthy body, as cuttle-fiſh bone, the baſis of alum, or chalk, tinged with ſome crimſon vegetable dye, ſuch as is obtained from cochineal or Brazil wood, diſſolved or taken up by means of ſome alkaline ſalt, precipitated on the earth by the addition of ſome acid. Lake is uſed in all kinds of painting, except enamel; but particularly in oil, where it ſupplies the place of carmine, which does not at all agree with that vehicle. It is valuable both for its brightneſs and crimſon teint; which make it uſeful for carnations to the portrait painters, for ſkies to the landſcape or ſhip painters, and for flowers to thoſe who paint ſtill life. Its tranſparency in oil renders it alſo of great ſervice in glazing, as it is called, over vermilion, and in painting ſcarlet draperies, and the red parts of the lips; and its acquiring a dark hue, by this tranſparency, when uſed without the addition of any opake pigment, gives it an unrivalled excellence in the ſhades of red draperies, or other ſimilar caſes. Beſides the perfections of lake, which it may have in common with other colours, there is yet another that relates only to itſelf, which is the inclining to the ſcarlet hue, that makes it more valuable for almoſt all the purpoſes to which it is applied; and where this quality, joined to the others, happens to be found in it, there is ſcarcely any limits to be ſet on its value with eminent painters of any kind.

Lake was moſt probably firſt made from the colour found in the grains of the ſtick-lac, from whence it ſeems to have taken its name; but it may be made from a great variety of ſubſtances which afford a crimſon tinge: though at preſent it is ſeldom prepared from any other than cochineal, ſcarlet rags, and Brazil wood.

* LACEDEMON, a city of Turky in Europe, in the peninſula of the Morea, which is the ancient Peloponneſus; it is ſeated on the river Eurotas, thirty miles north of the Sinus Laconicus, and ſixty miles ſouth of Corinth. Here are ſtill the ruins of ſeveral magnificent Grecian temples, and there are ſome traces of the grove where the Spartans performed their wreſtling, races, and other exerciſes. Long. 23, 31 E. Lat. 36, 45 N.

* LACHESIS, in fabulous hiſtory, the youngeſt of the three Parcæ or Deſtinies. She holds the diſtaff whilſt her ſiſter Clotho ſpins the thread of life, which Atropos cuts off.

LACHRYMAL, in anatomy, an appellation given to ſeveral parts of the eye from their ſerving to ſecrete the tears.

LACHRYMATORY, in antiquity, a veſſel wherein were collected the tears of a deceaſed perſon's friends, and preſerved along with the aſhes and urn.

LACONISM, in matters of ſtyle, a ſhort, pithy obſervation or ſaying; ſo called from the Lacedæmonians, who were remarkable for the conciſeneſs of their diſcourſe.

LACTEAL VESSELS, in anatomy, long ſlender tubes for the conveyance of the chyle from the inteſtines to the common reſervatory.

LACTIFEROUS PLANTS, in botany, ſuch plants as abound with a milky juice, as the lithymalus, ſonchus, and lettuce.

LADY's BEDSTRAW, a plant called by botaniſts gallium. See *Gallium.*

LADY's COMB, a plant otherwiſe called ſcandix. See *Scandix.*

LADY's FINGER, a ſpecies of vulneraria. See *Vulneraria.*

LADY's MANTLE, the Engliſh name of alchimilla. See *Alchimilla.*

LADY's SMOCK, the Engliſh name of cardamine. See *Cardamine.*

LADY's SLIPPER, the Engliſh name of the cypripedium. See *Cypripedium.*

LADY-DAY, in law, the 25th of March, being the annunciation of the Holy Virgin.

* LAFFELDT, *Battle of* (July 20, 1747) The duke of Cumberland took poſt with his whole army between the two Nethes, to cover Bergen-op-Zoom and Maeſtricht; and Mareſchal Saxe called in his detachments, with a view to hazard a general engagement. In the latter end of May the French king arrived at Bruſſels, and his general reſolved to undertake the ſiege of Maeſtricht. For this purpoſe he advanced towards Louvain; and the confederates perceiving his drift, began their march to take poſt between the town and the enemy. On the twentieth day of June they took poſſeſſion of their ground, and were drawn up in order of battle, with their right at Bilſon, and their left extending to the Wirte, within a mile of Maeſtricht, having in the front of their left wing the village of Laffeldt, in which they poſted ſeveral battalions of Britiſh infantry. The French had taken poſſeſſion of the heights of Hurdeeren, immediately above the allies, and both armies cannonaded each other till the evening. In the morning the enemy's infantry marched down the hill in a prodigious column, and attacked the village of Laffeldt, which was well fortified, and defended with ſurprizing obſtinacy. The aſſailants ſuffered terribly in their approach, from the cannon of the confederates, which was ſerved with ſurprizing dexterity and ſucceſs; and they met with ſuch

a warm reception from the Britiſh muſquetry as they could not withſtand: but when they were broken and diſperſed, freſh brigades ſucceeded with aſtoniſhing perſeverance. The confederates were driven out of the village; yet being ſuſtained by three regiments, they meaſured back their ground, and repulſed the enemy with great ſlaughter: nevertheleſs, count Saxe continued pouring in other battalions, and the French regained and maintained their footing in the village, after it had been three times loſt and carried. The action was chiefly confined to this poſt, where the field exhibited a horrible ſcene of carnage. At noon the duke of Cumberland ordered the whole left wing to advance againſt the enemy, whoſe infantry gave way: prince Waldeck led up the centre, mareſchal Bathiani made a motion with the right wing towards Herdeeren, and victory ſeemed ready to declare for the confederates; when the fortune of the day took a ſudden turn to their prejudice. Several ſquadrons of Duch horſe, poſted in the centre, gave way, and flying at full gallop, overthrew five battalions of infantry that were advancing from the body of reſerve. The French cavalry charged them with great impetuoſity, increaſing the confuſion that was already produced, and penetrating through the lines of the allied army, which was thus divided about the centre. The duke of Cumberland, who exerted himſelf with equal courage and activity, in attempting to remedy this diſorder, was in danger of being taken; and the defeat would, in all probability, have been total, had not Sir John Ligonier taken the reſolution of ſacrificing himſelf and a part of the troops to the ſafety of the army. At the head of three Britiſh regiments of dragoons, and ſome ſquadrons of imperial horſe, he charged the whole line of the French cavalry with ſuch intrepidity and ſucceſs, that he overthrew all that oppoſed him, and made ſuch a diverſion as enabled the duke of Cumberland to effect an orderly retreat to Maeſtricht. He himſelf was taken by a French carabineer, after his horſe had been killed; but the regiments he commanded retired with deliberation. The confederates retreated to Maeſtricht, without having ſuſtained much damage from the purſuit, and even brought off all their artillery except ſixteen pieces of cannon. Their loſs did not exceed ſix thouſand men killed and taken; whereas the French general purchaſed the victory at a much greater expence. The common cauſe of the confederate powers is ſaid to have ſuffered from the pride and ignorance of their generals. On the eve of the battle, when the detachment of count de Clermont appeared on the hill of Herdeeren, mareſchal Bathiani aſked permiſſion of the commander in chief to attack them before they ſhould be reinforced, declaring he would anſwer for the ſucceſs of the enterprize. No regard was paid to this propoſal: but the ſuperior aſked in his turn where the mareſchal ſhould be, in caſe he was wanted? He replied, "I ſhall be always found at the head of my troops," and retired in diſguſt. The ſubſequent diſpoſition has likewiſe been blamed, inaſmuch as not above one half of the army could act, while the enemy exerted their whole force.

LAGOECIA, round-headed cummin, in botany. This plant has neither the ſmell, appearance, or taſte of cummin; its ſmell being more like that of the carrot.

LAIR, among ſportſmen, the place where the deer harbour by day. This term is alſo uſed to ſignify a place where cattle uſually reſt under ſome ſhelter: by which means the ground generally becomes enriched with their dung.

* LAIS, a celebrated courtezan, was born at Hyccara, in Theſſaly. Her country being plundered by Nicias, ſhe was carried to Greece, and ſettled at Corinth, one of the moſt licentious cities in the world. Lais's beauty was ſo much extolled in Greece, that princes, nobles, orators and philoſophers, conceived a paſſion for her. It is ſaid, that Demoſthenes went ſecretly to Corinth, on purpoſe to ſpend a night with her, but that Lais having demanded ten thouſand drachmas, he returned back, ſaying, "he would "not buy repentance at ſo dear a rate." Diogenes the Cynic had a particular affection for her. The philoſopher Ariſtippus ſpent a great part of his fortune upon her. It is nevertheleſs ſaid, that ſhe did not love him, and being rallied upon it, he replied, "I do not think the "wine and fiſh love me, and yet I feed "upon them with great pleaſure." Notwithſtanding the extraordinary charms of Lais, ſhe could never draw the philoſopher Xenocrates to her houſe. Lais had ſuch a paſſion for Eubates of Cyrene, that ſhe made him promiſe to marry her, but after his having gained the prize at the Olympic games, he eluded that promiſe. Lais, at length, going to Theſſa-

ly to meet a young man, with whom ſhe was paſſionately in love, the women of that country entertained ſuch a jealouſy againſt her, that they beat out her brains in the temple of Venus. However, all authors are not agreed that ſhe died in this manner, for there are ſome who ſay, that ſhe was choaked with an olive-ſtone. She died 340 years before the chriſtian æra.

* LAIUS, in fabulous hiſtory, was the ſon of Addacus, king of Thebes, and married Jocaſta, by whom he had Oedipus, who, according to the prediction of the oracle, killed him.

LAKE, a collection of waters contained in ſome cavity in an inland place, of a large extent, ſurrounded with land, and having no communication with the ocean.

Lakes may be divided into four kinds. 1. Such as neither receive nor ſend forth rivers. 2. Such as emit rivers, without receiving any. 3. Such as receive rivers, without emitting any. And, 4. Such as both receive and ſend forth rivers. Of the firſt kind, ſome are temporary, and others perennial: moſt of thoſe that are temporary owe their origin to the rain, and the cavity or depreſſion of the place in which they are lodged: thus in India there are ſeveral ſuch lakes made by the induſtry of the natives, of which ſome are a mile, and ſome two in circuit; theſe are ſurrounded with a ſtone wall, and being filled in the rainy months, ſupply the inhabitants in dry ſeaſons, who live at a great diſtance from ſprings or rivers. There are alſo ſeveral of this kind formed by the inundations of the Nile and the Niger; and in Muſcovy, Finland, and Lapland, there are many lakes formed partly by the rains and partly by the melting of the ice and ſnow; but moſt of the perennial lakes, which neither receive nor emit rivers, probably owe their riſe to ſprings at the bottom, by which they are conſtantly ſupplied. The ſecond kind of lakes, which emit, without receiving rivers, is very numerous. Many rivers flow from theſe as out of ciſterns; where their ſprings being ſituated low within a hollow place, firſt fill the cavity, and make it a lake, which not being capacious enough to hold all the water, it overflows and forms a river: of this kind is the Wolga, at the head of the river Wolga; the lake Odium, at the head of the Tanais; the Adac, from whence one branch of the river Tygris flows; the Ozero, or White Lake in Muſcovy, is the ſource of the river Shackſna. The great lake Chaamay, which emits four very large rivers, which water the countries of Siam, Pegu, &c. viz. the Menau, the Aſa, the Caipoumo, and the Laquia, &c. The third ſpecies of lakes, which receive rivers, but emit none, apparently owe their origin to thoſe rivers, which in their progreſs from their ſource, falling into ſome extenſive cavity, are collected together; and form a lake of ſuch dimenſions, as may loſe as much by exhalation, as it continually receives from theſe ſources: of this kind is that great lake improperly called the Caſpian ſea; the lake Aſphaltites, alſo called the Dead ſea; and ſeveral others. Of the fourth ſpecies, which both receive and emit rivers, we reckon three kinds, as the quantity they emit is greater, equal, or leſs than they receive. If it be greater, it is plain that they muſt be ſupplied by ſprings at the bottom; if leſs, the ſurplus of the water is probably ſpent in exhalations; and if it be equal, their ſprings juſt ſupply what is evaporated by the ſun. Lakes are alſo divided into thoſe of freſh water, and thoſe of ſalt. Dr. Halley is of opinion, that all great perennial lakes are ſaline, either in a greater or leſs degree; and that this ſaltneſs encreaſes with time: and on this foundation he propoſes a method for determining the age of the world. Large lakes anſwer the moſt valuable purpoſes in the northern regions, the warm vapours that ariſe from them moderating the pinching cold of thoſe climates; and what is ſtill a greater advantage, when they are placed in warmer climates at a great diſtance from the ſea, the exhalations raiſed from them by the ſun, cauſe the countries that border upon them to be refreſhed with frequent ſhowers, and conſequently prevent their being barren deſarts.

LAMA, the ſovereign pontiff, or rather god of the Aſiatic Tartars, inhabiting the country of Barantola. The lama is not only adored by the inhabitants of the country, but alſo by the kings of Tartary, who ſend him rich preſents, and go in pilgrimage to pay him adoration, calling him *Lama-Congiu*, i. e. God the everlaſting father of heaven. He is never to be ſeen but in a ſecret place of his palace, amidſt a great number of lamps, ſitting croſs-legged upon a cuſhion, and adorned all over with gold and precious ſtones; where, at a diſtance, they proſtrate themſelves before him, it not being lawful for any to kiſs even his feet. He is called the great lama, or lama of lamas, that is, prieſt of prieſts. And to perſuade the people that he is immortal, the inferior prieſts, when he dies, ſubſtitute another in his ſtead, and ſo continue the cheat from generation to generation. Theſe prieſts perſuade the people, that the lama was raiſed from death many hundred years ago, that he has lived ever ſince, and will continue to live for ever.

LAMB, in zoology, the young of the ſheep-kind. See *Sheep*.

* LAMBRUN (Margaret) a Scotch woman, remarkable for her intrepidity. She was in the retinue of Mary queen of Scots, as was alſo her huſband, who dying of grief for the tragical end of that princeſs, ſhe reſolved to revenge the death of both on queen Elizabeth. For this purpoſe ſhe dreſſed herſelf in man's cloaths, aſſumed the name of Anthony Sparke, and repairing to the court of England, carried always about her a brace of piſtols, one to kill Elizabeth, and the other herſelf. But one day as ſhe was puſhing through the crowd to come up to her majeſty, who was walking in her garden, ſhe happened to drop one of the piſtols, which being ſeen by the guards, ſhe was ſeized, in order to be ſent to priſon; but the queen, not ſuſpecting her ſex, had a mind firſt to examine her. Accordingly demanding her name, country, and quality; ſhe replied with unſhaken readineſs, "Madam, tho' I appear in this dreſs, I am a woman. My name is Margaret Lambrun. I was ſeveral years in the ſervice of queen Mary, whom you have ſo unjuſtly put to death, and by her death you have alſo cauſed that of my huſband, who died of grief at ſeeing ſo innocent a queen periſh ſo iniquitouſly. Now as I had the greateſt love for them both, I reſolved, at the peril of my life, to revenge their death, by killing you, who are the cauſe." The queen heard her with the utmoſt coolneſs, and calmly anſwered: "You are then perſuaded that in this action you have done your duty, and ſatisfied the demands which your love for your miſtreſs and your ſpouſe indiſpenſibly required from you; but what do you think it is my duty to do to you?" Margaret boldly replied, "I will tell your majeſty frankly my opinion, provided you will pleaſe to let me know, whether you put this queſtion as a queen, or as a judge." Her majeſty ſaying, that it was as a queen. "Then," returned Margaret, "your majeſty ought to grant me a pardon. "But what ſecurity can you give me," ſaid the queen "that you will not make the like attempt upon ſome other occaſion?" "Madam," replied Lambrun, "a favour given under ſuch reſtraint, is no more a favour; and, in ſo doing, your majeſty would act againſt me as a judge." Upon this the queen, turning to ſome who were preſent, cried, "I have been thirty years a queen, but do not remember to have had ſuch a lecture ever read to me before: and then generouſly granted the pardon as unconditionally as it was deſired. But Margaret alſo requeſted the queen to extend her generoſity one degree farther, by granting her a ſafe-conduct out of the kingdom, till ſhe landed on the coaſt of France, to which Elizabeth readily conſented.

LAMENTATIONS, a canonical book of the Old Teſtament, written by the prophet Jeremiah. The two firſt chapters of this book are employed in deſcribing the calamities of the ſiege of Jeruſalem. In the third, the author deplores the perſecutions he himſelf had ſuffered. The fourth turns upon the deſolation of the city and temple, and the misfortune of Zedekiah. The fifth chapter is a prayer for the Jews in their diſperſion and captivity; and at the end of all, he ſpeaks of the cruelty of the Edomites, who had inſulted Jeruſalem in her miſery. The four firſt chapters of the Lamentations are an abecedary, every verſe or couplet beginning with one of the letters of the Hebrew alphabet, in the alphabetical order. The ſubject is of the moſt moving kind, and the ſtile throughout lively, pathetic, and affecting. "Did we ever find, ſays Dr. South, ſorrow flowing forth in ſuch a natural prevailing pathos, as in the Lamentations of Jeremy? One would think, that every letter was wrote with a tear; that every word was the noiſe of a breaking heart; that the author was a man compacted of ſorrows, diſciplined to grief from his infancy; one who never breathed but in ſighs, nor ſpoke but in a groan."

LAMIÆ, in heathen mythology, a kind of dæmons, in the form of women, ſaid to have devoured children.

LAMINÆ, in phyſiology, the thin plates whereof many ſubſtances conſiſt.

* LAMIA, in fabulous hiſtory, the daughter of Neptune, was a beautiful African, and reported to be the firſt woman who had the gift of prophecy. She had ſeveral children by Jupiter, which ſo

enraged Juno, that ſhe deſtroyed them all; this rendered the mother ſo furious, that her countenance became terrible, and ſhe ran about taking other people's children, and devouring them. There is another particular related of Lamia, or the Lamiæ: it is ſaid, that they could take out their eyes and put them in again, when they pleaſed, that they kept them in a box when at home, and made uſe of them when they went abroad.

LAMIA, a famous Grecian courtezan, was the daughter of an Athenian, named Cleanor, and from being by profeſſion a player on the flute, ſhe became the concubine of Ptolemy I. king of Egypt. She was taken in the ſea-fight in which Demetrius Poliorcetes gained the victory over Ptolemy, near the iſle of Cyprus, and obtained the affection of Demetrius, though ſhe began to be advanced in years She excelled, in witty ſayings, and ſmart repartees. The Athenians, who carried their adulation, with regard to Demetrius, to the moſt extravagant impieties, built a temple to this courtezan, under the name of Venus Lamia.

LAMIUM, dead-nettle, in botany. The flowers of this plant are ſaid to be good in the fluor albus, dyſentery, and ſcrophulous diſorders. The herb is aperient, emollient, and vulnerary.

LAMMAS-DAY, a feſtival celebrated on the firſt of Auguſt by the Romiſh church, in memory of St. Peter's impriſonment.

LAMP, a veſſel containing oil, with a lighted wick.

LAMPERN, in ichthyology, a ſpecies of petromyzon. It grows to about a foot long, though moſt of thoſe uſually caught are under that ſtandard.

LAMPREY, another ſpecies of petromyzon, with about twenty rows of teeth. It grows to two feet and an half, or more, in length. It is caught in ſome large rivers near the ſea, but is much leſs frequent than the former ſpecies.

* LANCASHIRE, a maritime county of England, bounded on the weſt by the Iriſh Sea; on the north by Cumberland and Weſtmoreland; on the eaſt by the Weſt Riding of Yorkſhire; and on the ſouth by Cheſhire. It is ſixty miles in length, but the breadth is very irregular. It is divided into ſix hundreds, and has twenty-ſeven market-towns, and ſixty pariſhes. As it is a county palatine, it has a court, in the duchy-chamber of Lancaſter at Weſtminſter, which takes cognizance of all cauſes that concern the revenue belonging to the duchy, of which the chief judge is the chancellor, under whom there is an attorney-general, a receiver-general, an auditor, the king's ſerjeant and council, ſecretary, deputy-clerk, and regiſter, attorney's-uſher, deputy-uſher, and meſſenger. There is likewiſe a court of chancery held at Preſton, to determine all cauſes in an equitable manner, relating to ſome peculiar cuſtoms of this duchy. The chancellor is alſo chief judge of this court, and has ſeveral officers under him. The people are repreſented in parliament by fourteen members, two for the county, and two each for the following towns, namely, Lancaſter, Liverpool, Preſton, Wigan, Clitheroe, and Newton. This county made part of the territory of the Brigantes, in the time of the Romans; and when the Saxons governed it, was ſubject to the kings of Northumberland, though the dominion was ſometimes divided into two. In the reigns of the Norman monarchs it was dignified with the honours and privileges of a county palatine and duchy, which it ſtill enjoys. The air of this county is pretty good, and not ſo ſubject to fogs as ſome others that are next the ſea, but the fens are unwholeſome. The ſoil in ſome parts yields plenty of corn, but the hilly parts to the eaſtward are generally ſtony and barren. Thoſe places called the moſſes yield very good turf for fuel. This county likewiſe produces very good hemp, and the cattle here are of a very large ſize. They have mines of coal, quarries of ſtone, and plenty of wood, and the ſea-port towns, particularly Liverpool, carry on a very conſiderable foreign trade. The principal rivers here are the Merſey, which divides this county from Cheſhire on the ſouth; the Ribble, the Were, and the Lon. Beſides theſe rivers there are ſeveral meers or large ponds, as Winander and Keninſton; that of Winander is the largeſt, being ten miles in length, and two in breadth; it abounds with all ſorts of fiſh, but is moſt remarkable for the char, which is accounted a great rarity, and is ſent potted to London and various parts of the kingdom; this fiſh has been thought peculiar to Winander meer, but that is a miſtake, for it is found in Keninſton meer, in a lake in Wales, and in the lake of Geneva. Keninſton meer is neither ſo large nor full of fiſh, and Martin meer has been drained many years ago. There are many mineral ſprings, of different ſorts and kinds, ſaid to be good for

many diſeaſes. The moſt remarkable of theſe is the burning well at Ancliff, two miles from Wigan. Beſides the river fiſh on the ſea-ſhore they have the ſea-dog, ink-fiſh, and the ſheath-fiſh, upon the ſands near Liverpool; beſides greenbacks, mullets, ſoals, ſand-eels, oyſters, lobſters, ſhrimps, and prawns; as alſo the beſt and largeſt cockles in England. On the ſea-ſhore they have many unuſual birds, as the ſea-crow, blue on the body, and black on the head and wings; the puffin; the aſper, a kind of ſea-eagle; the ſparling-fiſher, the cormorant, the curlew-hilt, and the razor-bill.

* LANCASTER, the county town of Lancaſhire; it was anciently a Roman ſtation, and was deſtroyed and burnt by the Scotch, after a ſudden irruption in 1322. It was afterwards rebuilt near a green hill. It was incorporated by king John, and is governed by a mayor, recorder, ſeven aldermen, two bailiffs, twelve capital burgeſſes, twelve common burgeſſes, a town clerk, and two ſerjeants at mace. The members of parliament are elected by a majority of the freemen, and it has two weekly markets, on Wedneſdays and Saturdays, and three fairs, on May 1, for cattle, cheeſe, and pedlar's ware; on July 5, for cattle, cheeſe, pedlar's ware, and wool; and on October 10, for cattle, wool, cheeſe, and pedlar's ware. The aſſizes are held in the caſtle, where is alſo the county jail. This is a very ancient ſtructure, and not very long ſince, in digging a cellar, under it were found Roman utenſils and veſſels for ſacrifice, as alſo coins of the Roman emperors, ſo that it was probably a Roman fortreſs. On the top of the caſtle there is a ſquare tower, called John of Gaunt's chair, from whence there is a charming proſpect of the adjacent country, eſpecially towards the ſea, where the Iſle of Man may be deſcried. This town has but one church, which is large. On the ſide of the hill below it, hangs a piece of a Roman wall, called Wery wall. The harbour is ſo choaked with ſand, that it will not admit ſhips of any conſiderable burthen. It is ſixty-eight miles ſouth-ſouth-eaſt of Carliſle, and two hundred and thirty-three north-north-weſt of London.

LANCEOLATED LEAF, one reſembling a ſpear's point.

LANCET, a chirurgical inſtrument, ſharp pointed and two edged, chiefly uſed for opening veins in the operation of phlebotomy, or bleeding; alſo for laying open abſceſſes, tumors, &c.

LAND, in a limited ſenſe, denotes arable ground. It is alſo uſed for meadow-ground, paſture, wood, commons, &c.

Various are the methods of improving lands, as, 1. By incloſing and dividing the ſame into ſeveral fields, for paſture or tillage, which is one of the moſt principal ways of improvement, firſt, by aſcertaining to every man his juſt property, and thereby preventing a number of treſpaſſes and injuries, that lands in general are ſubjected to, beſides the diſadvantage of being obliged to keep the ſame ſeaſons with the other people who have land in the ſame field; ſo that the ſowing, fallowing, and tilling the ground, muſt be equally performed by all the land-holders; and, when there happens a ſlothful negligent perſon, who has land intermixed with others, it is one of the greateſt nuiſances imaginable. Secondly, it being of itſelf a very great improvement: for, where land is properly incloſed, and the hedge-rows planted with timber-trees, &c. it preſerves the land warm, and defends and ſhelters it from the violent cold nipping winds, which in ſevere winters deſtroy much of the corn, pulſe, or whatever grows on the open field, or champaign grounds. And where it is laid down for paſture, it yields much more graſs than the open fields, and the graſs will begin to grow much ſooner in the ſpring. The hedges and trees alſo afford ſhelter for the cattle from the cold winds in winter; as alſo ſhade for them in the great heats of ſummer. And theſe hedges afford the farmer plenty of fuel, as alſo plough-boot, cart-boot, &c. and, where they are carefully planted and preſerved, furniſh him with timber, and maſt for his ſwine: or, where the hedge-rows are planted with fruit-trees, there will be a ſupply of fruit for cyder, perry, &c. which, in moſt parts of England, are of no ſmall advantage to the huſbandman.

By this method of incloſing, there is alſo much more employment for the poor, and is therefore a good remedy againſt beggary; for in thoſe open countries, where there are great downs, commons, heaths, and waſtes, there is nothing but poverty and idleneſs to be ſeen amongſt the generality of their inhabitants. It is very obſervable of late years, how much advantage the incloſing of the land in Worceſterſhire, and ſome other counties at a diſtance from London, has been to the inhabitants; for, before this method was introduced amongſt them, the lands, for the moſt part, lay in commons, &c. upon which the poorer ſort of people built themſelves cottages with mud walls, where they contented themſelves with a cow or two, and ſome ſwine: and thoſe of them who were more induſtrious than the reſt, travelled to the neighbourhood of London every ſpring, where they were employed in the gardens and fields for the ſummer ſeaſon; and in autumn they returned to their native counties, where they lived in winter upon what money they had ſaved in ſummer. But, ſince they have converted their waſtes and commons into incloſures, there are but few of the inhabitants of thoſe counties who come to London for work, in compariſon to the numbers that formerly came; ſo that moſt of the labourers who come to London for employment, are either Welch, or inhabitants of ſome diſtant counties, where this improvement hath not as yet been introduced.

The advantages of incloſing land are now ſo generally known, that there is no occaſion for us to enumerate them here; ſince the improvements which have been made of late years, in ſeveral parts of England, and the increaſe of rent, that is every-where made by thoſe that incloſe, are ſufficient arguments to enforce the practice, and render it general; more eſpecially in the North, where it is much neglected; becauſe it would greatly ſhelter the lands, and render them much warmer than they now are.

In incloſing of land, there ſhould be regard had to the nature of the ſoil, and what it is intended for; becauſe corn land ſhould not be divided into ſmall parcels; for, beſides the loſs of ground in hedges, &c. the corn ſeldom thrives ſo well in ſmall incloſures, as in more open fields; eſpecially where the trees are large in the hedge-rows. The graſs alſo in paſtures is not ſo ſweet near hedges, or under the drip of trees, as in open expoſures; ſo that where the incloſures are made too ſmall, or the land is overplanted with trees, the herbage will not be near ſo good, nor in ſo great plenty, as in larger fields: therefore before a perſon begins to incloſe, he ſhould well conſider how he may do it to the greateſt advantage: as, for inſtance, it is always neceſſary to have ſome ſmaller incloſures near the habitation, for the ſhelter of cattle, and the conveniency of ſhifting them from one field to another, as the ſeaſon of the year may require; and hereby the habitation, barns, ſtables, and outhouſes, will be better defended from ſtrong winds, which often do great damage to thoſe that are expoſed to their fury. Theſe ſmall incloſures may be of ſeveral dimenſions; ſome of them three, four, ſix, or eight acres in extent; but the larger diviſions for corn ſhould not contain leſs than twenty or thirty acres, or more, according to the ſize of the farm.

The uſual method of incloſing land is, with a ditch and bank ſet with quick. But in marſh land, where there is plenty of water, they content themſelves with only a ditch, by the ſides of which they uſually plant ſallows or poplars, which, being quick of growth, in a few years, afford ſhade to the cattle; and when they are lopped, produce a conſiderable profit to their owners. See *Fence*.

2. The draining of land is alſo another great improvement to it: for though paſtures and meadows, which are capable of being overflowed, produce a greater quantity of herbage than dry land; yet where the wet lies too long upon the ground, the graſs will be ſour, and extremely coarſe; and where there is not care taken in time to drain this land, it will produce little graſs, and ſoon be over-run with ruſhes and flags, ſo as to be of ſmall value. See *Bog* and *Fen*.

As the draining of cold wet lands is a great improvement to them, ſo the floating or watering of dry looſe lands is not a leſs advantage to them. This may be eaſily effected where there are rivers, or reſervoirs of water, which are ſituated above the level of the ground deſigned to be floated, by under-ground drains, through which the water may be conveyed at proper ſeaſons, and let out on the ground: in order to this, there muſt be good ſluices made at the heads of the drains, ſo that the water may never get out, but at ſuch times as is required, for if this be not taken care of, the water, inſtead of improving the land, will greatly damage it.

But where the land lies ſo high, as that there is no water in the neighbourhood lying above its level, it will be more expenſive, becauſe in ſuch caſe the water muſt be raiſed by machines, from reſervoirs or ſtreams which lie below it. The moſt common engine for this purpoſe is the Perſian wheel. See the article *Perſian Wheel*.

Yet notwithſtanding the expence of raiſing the water, it has been found very advantageous, in many parts of England, to drown the lands, for the profit has many times more than doubled the charge.

The time for drowning of land is uſually from November to the end of April: but though this is the general practice, yet for many reaſons it is not to be approved of: the firſt is, that by the water lying continually on the ground in the winter, the roots of the finer ſorts of graſs are rotted and deſtroyed; and by letting on of the water at the ſeaſon when the ſeeds of docks, and other bad weeds, which commonly grow by river-ſides, are falling, theſe ſeeds are carried upon the land, where they remain and grow, and fill the ground with bad weeds; which is commonly the caſe with moſt of the water meadows in England, the graſs in general being deſtroyed; ſo that ruſhes, docks, and other trumpery, make up the burden of theſe lands; but if theſe meadows were judiciouſly managed, and never floated till March or April, the quantity of ſweet good graſs would be thereby greatly increaſed, and the beautiful verdure of the meadows preſerved: but there is little hope of convincing thoſe perſons by arguments, who are ſo much wedded to their own prejudices, as to ſhut their eyes and ears againſt experiments or reaſon. Where the land is very hot and dry, and it lieth convenient to be watered at a ſmall expence, it ſhould be repeated every week in dry hot weather, which will prove a great advantage to the land. But whenever this is done, there ſhould no cattle be admitted while it is wet; for they will poach, and ſpoil the turf.

3. Another great improvement of land is by burning of it; which, for ſour, heathy, and ruſhy land, be it either hot or cold, wet or dry, is a very great improvement: ſo that ſuch lands will, in two or three years after burning, yield more, excluſive of the charges, than the inheritance was worth before: but this is not to be practiſed on rich fertile land; for as the fire deſtroys the acid juice, which occaſions ſterility in the poor land, ſo it will in like manner conſume the good juices of the richer land, and thereby impoveriſh it; ſo that it hath been with great reaſon diſuſed in deep rich countries.

4. It is alſo a very great improvement, where land is overgrown with broom, furze, &c. to ſtub them up by the roots, and when they are dry, lay them on heaps, and cover them with the parings of the earth, and burn them, and ſpread the aſhes over the ground. By this method vaſt tracts of land, which at preſent produce little or nothing to their owners, might be made good at a ſmall expence, ſo as to become good eſtates to the proprietors.

* LANDAFF, a city in Glamorganſhire, ſo called from being a biſhop's ſee, tho' at preſent it is little more than a village. It is ſeated on the river Taff, but its cathedral ſtands on the low ground, being a ſpacious and ſuperb ſtructure. It has two fairs, on February 9, and Whit-Monday, for cattle and ſtockings: not far from the cathedral are the ruins of an old caſtle, which was formerly the biſhop's palace. It is forty miles north of Briſtol, and one hundred and and ſixty-ſeven weſt of London. Long. 3. 20. E. Lat. 51. 33. N.

* LANDSDOWN HILL, *Battle of*, (July 5. 1643.) The two houſes, immediately after the battle of Stratton, ſent Sir William Waller to raiſe an army in the county of Somerſet, in order to retrieve their affairs. He acted with ſuch ſecrecy and diſpatch, that a detachment from his army endeavoured to beat up the quarters of the marquis of Hartford at Somerton, before he had any intelligence of their approach. They were, however, repulſed by the earl of Carnarvon, who purſued them ſo far, that he fell into a kind of ambuſcade formed by a ſtrong party of Waller's dragoons, before which he was obliged to retreat in his turn, till he was ſuſtained by prince Maurice: a very ſmart action enſued, in which the prince exhibited repeated proofs of the moſt intrepid bravery, and the enemy were routed with conſiderable loſs. The royaliſts having reſted a few days at Wells, advanced towards Sir William Waller, who had fixed his head-quarters at Bath, and received from London a reinforcement of five hundred cavalry, ſo completely armed with cuiraſſes and defenſive armour, that the loyaliſts termed them the lobſters; and in the ſequel found them generally irreſiſtible. After ſome ſkirmiſhes that were fought with various ſucceſs, the marquis and prince Maurice marched to Marsfield, five miles beyond Bath, in the road to Oxford. Waller, whoſe aim was to prevent their joining the king, immediately took poſſeſſion of Landſdown hill, which he fortified with breaſt-works and cannon. Then he detached a body of horſe towards Marsfield, from whence they were driven back [illegible]

the loyaliſts; who drew up their forces in order of battle on the plain; but perceiving how advantageouſly the enemy was poſted, they began to retreat to their old quarters. Waller immediately ſent his whole cavalry to fall upon their flank and rear; and the new regiment of cuiraſſiers did great execution, ſo that the king's horſe, hitherto deemed invincible, were broken and diſmayed: nevertheleſs they were rallied by the valour and activity of their officers, and the enemy fled in their turn. Then the royaliſts attacked the hill with ſurprizing courage, and gained the ſummit after a very obſtinate engagement, the enemy retiring behind a ſtone wall, where they faced the king's troops in good order till night, and then retired to Bath by favour of the darkneſs. The marquis was left in poſſeſſion of the field; but the victory was not purchaſed without conſiderable damage. Sir Bevil Greenvill was killed in the attack, together with a good number of excellent officers; and next morning, as Sir Ralph Hopton and ſerjeant-major Sheldon rode about the field, they were blown up with gun-powder, eight barrels of which happened to be in a waggon, and took fire either by treachery or accident. The major died next day, to the unſpeakable regret of the army, by which he was beloved for his courage and amiable diſpoſition; and Sir Ralph Hopton was ſo miſerably ſcorched, that they deſpaired of his recovery. The loſs of this great man, who was the darling of the ſoldiers, they deemed equivalent to a defeat, and retreated with heavy hearts to Marsfield.

LANDSKIP, or LANDSCAPE, in painting, the view or proſpect of a country, extended as far as the eye will reach.

LANGUAGE, an aſſemblage of expreſſions among any people, whereby to communicate their thoughts to each other. And this chance or caprice has eſtabliſhed at firſt; ſo that uſage is the rule of a language, nor has reaſon any thing to do therein, unleſs to ſtudy or teach it, ſuch as it is. Here then commences grammar, which only furniſhes reflections, called rules, to which the manners of ſpeaking uſed in that language may be reduced.

There is found a conſtant reſemblance between the genius of each people, and the language they ſpeak. Thus the Greeks, a polite but voluptuous people, had a language perfectly ſuitable, full of delicacy and ſweetneſs. The Romans, who ſeemed only born to command, had a language noble, nervous, and auguſt; and their deſcendants, the Italians, are ſunk into ſoftneſs and effeminacy, which is as eaſily perceivable in their language as in their manners. The language of the Spaniards is full of that haughtineſs which conſtitutes the diſtinguiſhing character of the people. The French, who have a world of vivacity, have a language that runs extremely briſk and lively. And the Engliſh, who are naturally blunt, thoughtful, and of few words, have a language exceeding ſhort, conciſe, and ſententious.

The diverſity of languages is generally allowed to have taken its riſe from the confuſion at the Tower of Babel, both by Jews, Chriſtians, and Mahometans; but the manner in which this diverſity was effected is ſtill in diſpute among the learned.

As to the point of antiquity and priority among languages, that too has been extremely controverted. The Egyptians and Phrygians diſputed concerning the antiquity of their languages; the Arabs diſpute the point of antiquity with the Jews; but theſe, jealous even to exceſs of the honour of their nation, poſitively inſiſt that the Hebrew tongue, ſuch as is found in the Holy Scriptures, is the primitive language, and that ſpoken by the firſt man; while others contend that the Hebrew, Chaldee, and Arabic, are only dialects of the original tongue: however that be, the Arabic is held to be the moſt copious of all languages. See the articles *Arabic*, *Chaldee*, *Hebrew*, *Egyptian*, and *Phrygian*, &c.

Languages are divided into, 1. Original or mother tongues, as the Hebrew and Arabic in the Eaſt; Kircher adds the Cophtic; the Teutonic and Sclavonic in the Weſt. And Du John maintains the Gothic to be the mother of the Teutonic tongues, namely, thoſe ſpoken in the North; and ſome add the Biſcayan or Bas Briton, as the mother-tongue of the Celtæ or Gauls.

2. Derivative languages, which are thoſe formed out of a mixture of ſeveral others, as Latin, French, &c.

Learned or dead languages are thoſe which only ſubſiſt in books, and which muſt be learned by the rules of grammar, as the Greek, Hebrew, Syriac, and Chaldee.

Living languages are thoſe ſtill ſpoken in ſome country or other, and which may be learned by converſation. The moſt popular among theſe are the French, Italian, Spaniſh, and Engliſh.

LANGUED, in heraldry, is applied to ſuch animals whoſe tongues appear out of their mouths, being of a different colour from that of the body.

LANGUEDOC, a province in the ſouth of France, bounded on the north by Querci, Rovergue, Auvergne, and Lyonnois; on the eaſt by Dauphiny and Provence; on the weſt by Gaſcony, and on the ſouth by the Mediterranean ſea and Rouſillon. It is two hundred and twenty-five miles in length, and one hundred in breadth, where broadeſt. It is a very fertile country, abounding in corn, fruit, and the moſt exquiſite wines. The moſt conſiderable rivers are the Rhone, the Garonne, the Aude, the Tarne, the Allial, and the Loire. This province is divided into two by the Royal Canal, which joins the Mediterranean and the ocean, which was undertaken in 1666, and finiſhed in 1680. There are a great number of mineral ſprings in this province, and there are mines of iron, lead, ſilver, and gold; but theſe laſt are inconſiderable, and not worked. The quarries of marble are near the town of Coſne, and are very advantageous to the province in general It has a red ground with white ſpots, and is known by the name of marble of Languedoc. The clergy of this province are the richeſt and moſt numerous of all France. The capital city is Toulouſe.

LANGUOR, a faintneſs or relaxation of the members, owing either to a want or decay of ſpirits.

LANIGEROUS, among herbaliſts, trees that bear ſuch a woolly or downy ſubſtance as is commonly contained in the catkids of the willow, &c.

LANIUS, the butcher-bird, in ornithology, a ſpecies of falcon, with black legs, a grey back, and variegated belly.

LANNAR, or LANERET, the blue-legged falcon, with oblong black and white ſpots. It is a very beautiful bird, about the ſize of a common crow, very bold, and uſually kept for the diverſion of hawking.

LANTERN, or LANTHORN, a well-known invention for ſhewing light in the night

Magic LANTERN, an optic machine, whereby little painted images are repreſented ſo much magnified, as to be accounted the effect of magic by the ignorant.

The contrivance is briefly this: A B C D (pl. XXV. fig. 3.) is a lanthorn, from whoſe ſide there proceeds a ſquare tube *b n k l m c*, conſiſting of two parts; the outermoſt of which *n k l m* ſlides over the other, ſo as that the whole tube may be lengthened or ſhortened by that means. In the end of the arm *n k l m* is fixed a convex glaſs *k l*; about *d e*, there is a contrivance for admitting and placing an object, *d e*, painted in dilute and tranſparent colours, on a plane thin glaſs, which object is there to be placed inverted. *b b c* is a deep convex glaſs, placed in the other end of the tube, the only uſe of which is to caſt the light of the flame ſtrongly on the picture *d e*, painted on the plane thin glaſs. Hence, if the object *d e* be placed farther from the glaſs *k l* than its focus, it is manifeſt that the diſtinct image of the object will be projected by the glaſs *k l* on the oppoſite white wall F H. at *f g*; and that in an erect poſture. See *Camera obſcura*.

LANTERN, in architecture, a little dome raiſed over the roof of a building, to give light, and ſerve as a crowning to the fabric

LANUGO, the ſoft down of plants, like that growing on the fruit of the peach-tree; whence ſuch plants are termed lanuginous.

LAPATHUM, the dock, in botany, a perennial plant.

LAPATHUM *acutum folio plano*, ſharp-pointed wild dock. The roots of the ſharp-pointed dock, as well as the other common wild docks, are ſuppoſed to have an aperient and laxative, as well as an aſtringent and corroborating virtue, approaching in this reſpect to rhubarb, but differing widely in degree, their ſtypticity being greater, and their purgative quality, if really they have any purgative quality at all, far leſs. They ſtand recommended in habitual coſtiveneſs, obſtructions of the viſcera, ſcorbutic and cutaneous maladies: in which laſt intention, fomentations, cataplaſms, or unguents of the roots have been commonly joined to their internal uſe: in many caſes, the external application alone is ſaid to be ſufficient. A decoction of half an ounce or an ounce of the freſh roots, or of a dram or two of the dry roots, is commonly directed for a doſe

LAPATHUM *aquaticum folio cubitali*, great wild water dock.

LAPATHUM *rhabarbarum monachorum*, Monks rhubarb, garden patience.

This root is ſuppoſed to poſſeſs the virtues of rhubarb, in an inferior degree It is obviouſly more aſtringent than rhubarb, but comes very far ſhort of it in purgative virtue, though given, as uſually directed, in double its doſe; nauſeating the ſtomach, without producing any conſiderable evacuation. It communicates a deep yellow tincture both to water and ſpirit.

LAPIDARY, an artificer who cuts precious ſtones.

The art of cutting precious ſtones is of great antiquity. The French, though they fell into it but lately, have notwithſtanding carried this art to a very great perfection, but not in any degree ſuperior to the Engliſh.

LAPIS, in general, is uſed to denote a ſtone of any kind.

LAPSA denotes a patron's neglect or omiſſion to preſent to a church within ſix months after it becomes vacant. When after a vacancy the patron does not preſent in ſix months, the ordinary has the next ſix months to collate to the benefice; and if he does not preſent within that time, the metropolitan has farther ſix months to do it in; and if he ſhould fail in doing it in his time, the next ſix months devolves to the crown.

LARCENY, in law, a felonious carrying away another perſon's goods; and this, according to the value of the thing ſtolen, is either grand, or petit larceny; the firſt being ſtealing effects above the value of 1 s. and the laſt ſuch as are either of that value, or under it: but where two perſons together ſteal goods to the value of only 13d. it is grand larceny in both; and if one perſon at different times ſteal ſeveral different things from the ſame perſon, which amount upon the whole to above 12 d. value, they may be joined in one indictment, and the offender found guilty of grand larceny; but this is very ſeldom practiſed; on the contrary, the jury, where the theft appears to be the firſt offence, frequently bring in their verdict, as they lawfully may, that the things are not above 10 d value, and by that means reduce the offence to petit larceny, though the offender may perhaps be indicted for ſtealing to the value of 30 or 40 s. and upwards. The crime of grand larceny is puniſhable with death, and that of petit larceny only with the corporal puniſhment of whipping, &c.

LARES, certain inferior deities among the ancient Romans, who were the guardians of houſes; they were alſo ſometimes taken for the guardians of ſtreets and ways, and Tibullus makes them the guardians of the fields.

LARIX, the larch tree, in botany, a genus of trees, whoſe leaves, which are long and narrow, are produced out of little tubercles, in form of a painter's pencil: the cones are produced at remote diſtances from the male flowers on the ſame tree: the male flowers are very like ſmall cones at their firſt appearance, but afterwards ſtretched out in length. Theſe trees are propagated by ſeeds, which ſhould be ſown in the beginning of March, upon a bed of light ſoil, expoſed only to the morning ſun: or otherwiſe it may be ſown in pots or boxes of light earth, and placed near an hedge, where they may have the morning ſun only. Theſe trees are very proper for the ſides of barren hills, where few other ſorts will thrive ſo well; nor is this tree very delicate in its ſoil, but will grow much better on poor ſtrong ſtony land, than in rich ground: and, during the ſummer, they appear very beautiful; but in autumn they caſt their leaves, whereby ſome people have been deceived, by ſuppoſing them dead, and have deſtroyed them. From the wounded bark of this tree exudes the pureſt Venice turpentine; and on the body and branches of it grows the agaric, which is a drug uſed in medicine: the wood is very durable, and, by ſome, reported to be very difficult to burn. But I do not know how this ſhould be, to a tree which abounds with turpentine; though it is ſaid alſo to be ſo ponderous as to ſink in water. It will poliſh exceeding well, and is by the architects abroad much coveted, both for houſes, and building of ſhips. Witſen, a Dutch writer upon naval architecture, mentions a ſhip to be long ſince found in the Numidian ſea, twelve fathoms under water, being chiefly built of this timber and cypreſs, both which woods were reduced to that hardneſs, as to reſiſt the ſharpeſt tools; nor was any part of it periſhed, though it had lain above a thouſand years ſubmerged. And it was upon tables of this wood that Raphael, and ſeveral of the greateſt artiſts, eterniſed their ſkill, before the uſe of canvas was introduced. *Miller's Gard. Dict.*

LARK, *Alauda*, in ornithology, a diſtinct genus of birds. To this genus belong, 1. The ſky-lark, with the long-winged feathers, variegated with white and brown. 2. The tit-lark, with a white line over the eyes. 3. The wood-lark, with the wings obliquely variegated with white. 4. The yellow-breaſted lark. 5. The ſnow-bird, or pied chaffinch, with the tail feathers black, except the three lateral ones, which are white.

LARK-SPUR, delphinium, in botany. See *Delphinium*.

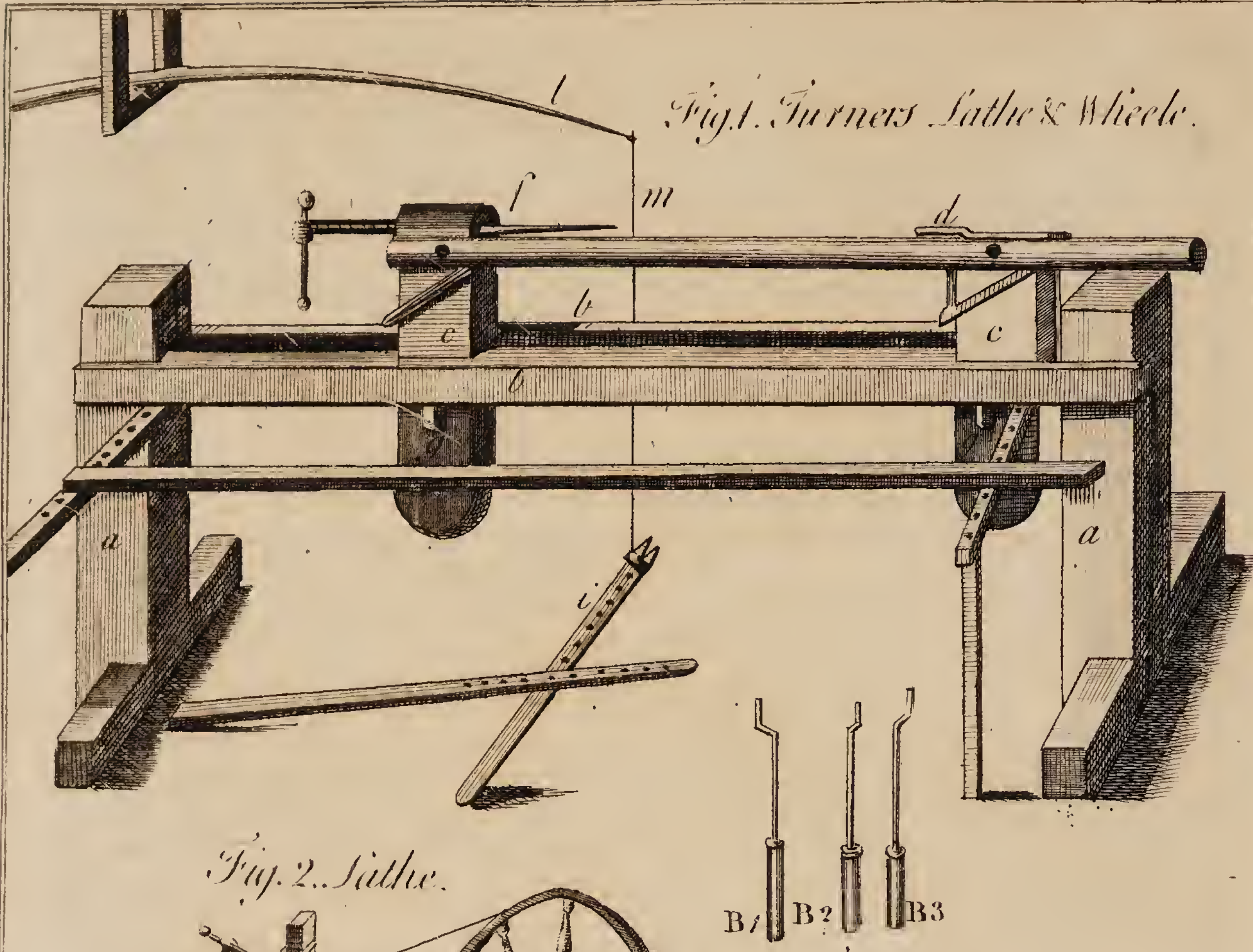


Fig. 1. Turners Lathe & Wheele.

Fig. 2. Lathe.

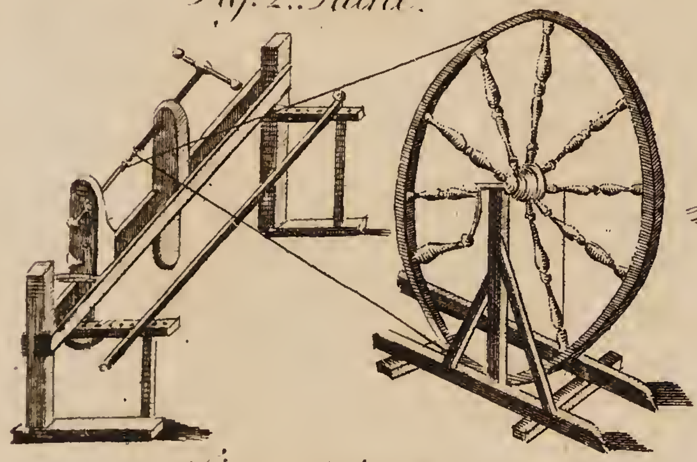


Fig. 3. Braziers Lathe.

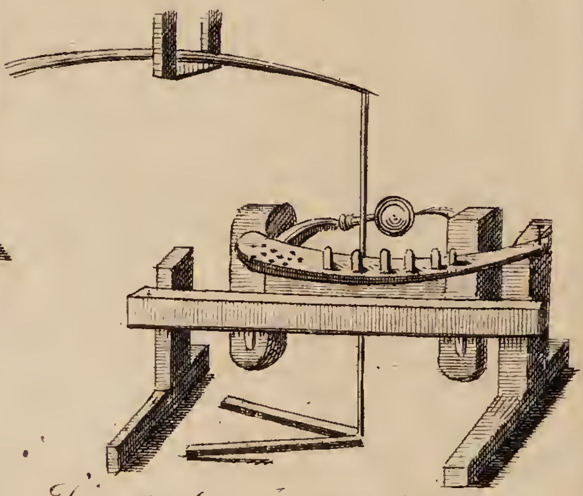


Fig. 5. Lathe for turning Oval and Rose Work.

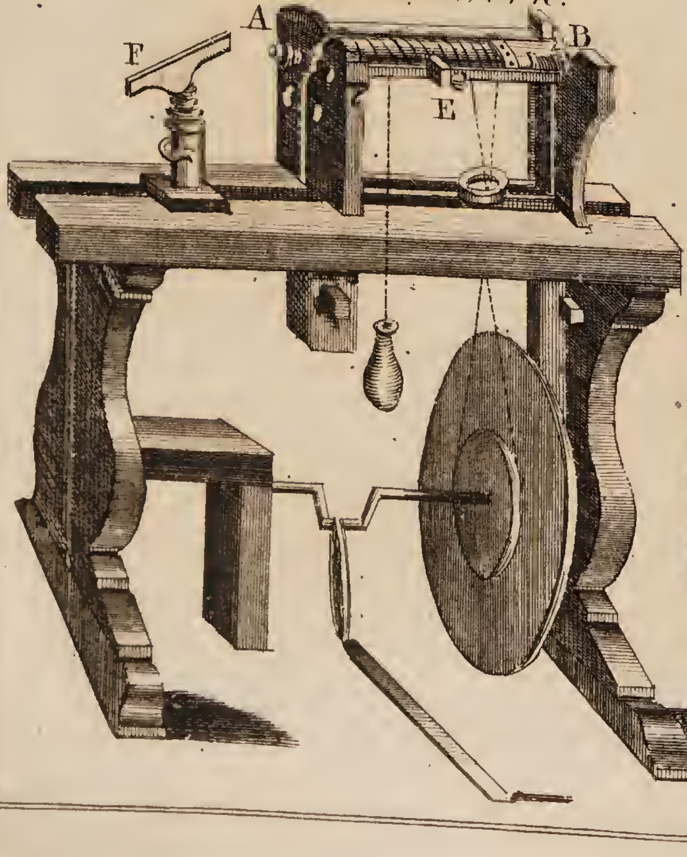
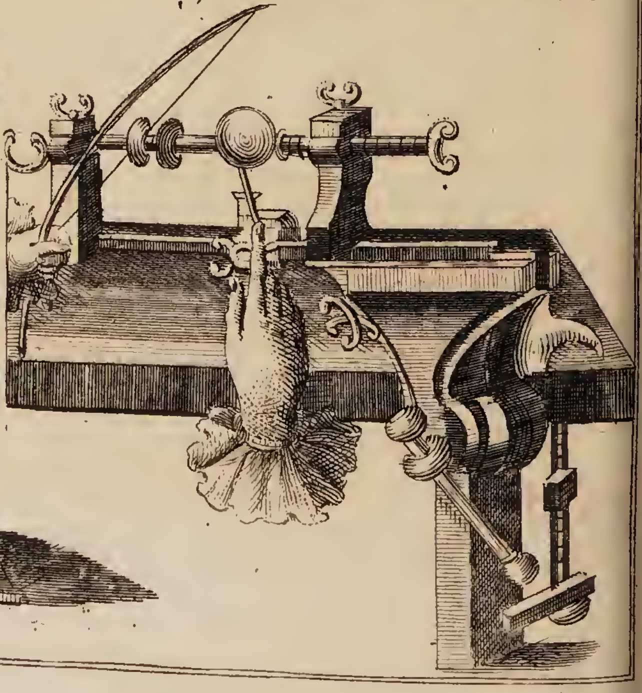


Fig. 4. An Iron Lathe for turning small Work in Metal.



LARMIER, in architecture, a flat ſquare maſſive member of the corniche, between the cymatium and ovolo.

LARUS, the gull, in ornithology, a genus of the anſeres order of birds.

LARYNX, in anatomy, forms the protuberance in the upper and anterior part of the neck, called pomum Adami: it is termed the head of the trachea arteria, being more prominent in men than in women. It principally conſiſts of five cartilages, as the cartilago thyroides, cricoides, two arytenoides, and the epiglottis; they are connected together by ligaments, and have muſcles, glands, and membranes belonging to them. The larynx ſerves particularly to admit and let out the matter of reſpiration; and the ſolidity of its pieces hinders not only external objects, but alſo any hard thing, which we ſwallow, from diſordering this paſſage. The glottis, being a narrow ſlit, modifies the air we breathe, and as it is very eaſily dilated and contracted, it forms the different tones of the voice, by means of the different muſcles inſerted in the cartilagines arytenoideæ, to which the other muſcles, both proper and common, are aſſiſtants. The whole larynx is alſo of uſe in deglutition, by means of its connection with the os hyoides, to which the digaſtric muſcles of the lower jaw adhere, which muſcles raiſe the larynx with the os hyoides every time we ſwallow. The faculty of varying and changing the tone of the voice depends on the flexibility of the cartilages of the larynx, and decreaſes in proportion as we advance in age.

LASERPITIUM, Laſer-wort, a genus of plants.

LASSITUDE, *Laſſitudo*, in phyſic, a morbid ſenſation that comes on ſpontaneouſly without any previous motion, exerciſe, or labour. This is a frequent ſymptom in acute diſtempers. It ariſes either from an increaſe of bulk, a diminution of proper evacuation, or too great a conſumption of the fluid neceſſary to maintain the ſpring of the ſolids, or from a vitiated ſecretion of that juice. The remedy in the firſt is evacuation, and in the other a proper diet, or ſuch alterative medicines as influence ſuch a ſecretion.

LAST, in general, ſignifies the burden or load of a ſhip. It ſignifies alſo a certain meaſure of fiſh, corn, wool, leather, &c. A laſt of cod-fiſh, white herrings, meal, and aſhes for ſoap, is twelve barrels: of corn or rape-ſeed, ten quarters; of gun-powder, twenty-four barrels; of red herrings, twenty cades; of hides, twelve dozen; of leather, twenty dickers; of pitch and tar, fourteen barrels; of wood, twelve ſacks; of ſtock-fiſh, one thouſand; and of flax or feathers, one thouſand and ſeven hundred pounds weight.

LAST, in the marſhes of Kent, is applied to a court held by the twenty-four jurats, in which orders are given for the impoſing and levying of taxes for preſerving the ſaid marſhes.

LATERAN COUNCILS, thoſe councils held in the Baſilica of the Latin church at Rome. See *Council*. There have been five councils held in this place, viz. in the years 1123, 1139, 1179, 1215, and 1513.

A LATERE, a term uſed to denote the qualifications of cardinals whom the pope ſends as legates into foreign courts, who are called legates a latere, as being aſſiſtants to his holineſs, and counſellors in ordinary: theſe are the moſt conſiderable of the three other legates, being ſuch as the pope commiſſions to take his place in councils, and ſo called in regard that he never gives this office to any but his favourites and confidants, who are always *a latere*, at his ſide.

DE LATERE, legates who are not cardinals, but yet are intruſted with an apoſtolical legation.

LATH, in building, a long, thin, and narrow ſlip of wood, uſed to nail to the rafters of a room or ceiling, in order to ſuſtain the covering. Theſe are diſtinguiſhed into three kinds, according to the different kinds of wood of which they are made, viz. heart of oak, ſap laths, and deal laths; of which the two laſt are uſed for cielings and partitions, and the firſt for tiling only.

LATH-BRICKS, bricks much longer than ordinary, uſed inſtead of laths, for drying malt: for which purpoſe they are extremely proper, as not being liable to catch fire, and retaining the heat much longer than thoſe of wood; ſo that a very ſmall fire will ſerve, after they are once heated.

LATHE, an engine uſed in turning wood, ivory, and other materials. (See plate XXVI. fig. 1.) It is compoſed of two legs or ſtyles, *a a*, which are commonly about two feet ten inches high, on the upper part of which are faſtened two pieces of wood, called cheeks, *b*, *b*, parallel to the horizon: between theſe are two pieces of wood, called puppets, *c*, *c*, made to ſlide between the cheeks, and to be fixed down at any point at pleaſure; near the upper end of one of theſe puppets is faſtened a ſtrong ſpike of tempered ſteel, *d*, and oppoſite to it, in the other, is an iron ſcrew, *f*; by theſe the piece to be turned is ſuſtained, and is turned round by means of the ſtring *m*, put round it, and faſtened above to the pliable pole *l*, and underneath to the treddle or board, *i*, moved with the foot: there is alſo a piece of wood between the checks, called a reſt, *e*, whoſe office is to reſt the tool upon, that it may lie in a ſteady poſition while the workman uſes it.

When turners perform heavy work, which the pole and treddle will not command, they uſe inſtead of theſe a wheel (fig. 2.) which is turned about ſometimes with one, and ſometimes with two handles, according to the weight of the work; its ſtring hath both its ends neatly faſtened together, and this being fixed in a groove round the edge of the wheel, and after being croſſed, put round a groove in the work, it is eaſily turned round with a ſwift and regular motion. This is the moſt expeditious method of working; for the ſpringing up of the pole makes an intermiſſion in the turning of the work, but with the wheel it always turns the ſame way, ſo that the tool need never be taken off, unleſs it be to examine the work as it is doing.

Braziers, who turn pots, kettles, &c. have their lathe made in a different manner from that uſed by turners, as may be ſeen in fig. 3.

The puppets and reſts are much ſtronger than thoſe uſed by the turners: their edge-tools, which they call hooks, are alſo of a different ſhape from the chiſſels and other tools uſed by turners, as may be ſeen *ibid.* marked B 1, B 2, B 3, being bent backwards and forwards at the cutting end. And as the common turners work with a round ſtring made of gut, the braziers work with a flat leather-thong, which wrapping cloſe and tight about the rowler of their mandril, commands it with the greater eaſe, and turns it more forcibly about.

Small work in metal is turned in an iron lathe, called a turn-bench, repreſented in fig. 4. When this is uſed, it is fixed in the chaps of a vice, and the work being fitted on a ſmall iron axis, with a drill barrel fitted upon a ſquare ſhank near the end of it, the workman turns it round with a drill-bow, which he holds in his left hand, while he forms the moulding with a graver or other tool, which he holds in his right.

In turning oval or roſe-work, the common turner's lathe muſt be provided with the additional parts repreſented in fig. 5. which repreſents the whole machine with all its parts ready for working; A being the fore-puppet, with its apparatus; B, the hinder-puppet; C, a hollow axis, turned into a ſcrew faſhion, to direct the weight D, by means of the nut E; and F, the ſupport of the tools, which may be raiſed or lowered at pleaſure.

LATHE, or LETH, as uſed in Kent and Suſſex, is part of a county, containing three or four hundreds.

LATHRÆA, great tooth-wort, in botany, a genus of plants.

LATHYRUS, chickling pea, in botany, a genus of plants.

* LATIMER, (HUGH) biſhop of Wincheſter, one of the firſt reformers of the church of England, was born at Thirkeſſon, in Leiceſterſhire, about the year 1470, and ſtudied at Cambridge. Having entered into prieſt's orders, he behaved with remarkable warmth and zeal in defence of popery: heard with the higheſt indignation thoſe who were turned the novel teachers, and inveighed publickly and privately againſt the reformers. In ſhort, his zeal was ſo remarkable, that the univerſity elected him their croſs-bearer in all public proceſſions; a poſt which he diſcharged with the utmoſt ſolemnity. Among the favourers of the Reformation was Mr. Thomas Bilney, a clergyman, diſtinguiſhed by his exemplary piety and humanity; and this gentleman being acquainted with Mr. Latimer, whom he eſteemed on account of his ſincerity and honeſty of heart, he, as opportunities offered, ſuggeſted many things to him about corruptions in religion in general, and exhorted him to lay aſide his prejudices, and conſider with an honeſt heart the objections urged againſt the doctrines of popery. This had its deſired effect, and Mr. Latimer no ſooner ceaſed being a zealous papiſt, than, from the ſame warmth of conſtitution, he became a zealous proteſtant, and was extremely aſſiduous in making converts, both in the town and univerſity. The firſt remarkable oppoſition he met with was occaſioned by a courſe of ſermons he preached before the univerſity, during the Chriſtmas holydays, in which he particularly inſiſted on the great abuſe of locking up the ſcriptures in an unknown tongue, and ſhewed that true religion

was ſeated in the heart; and that, in compariſon with it, external appointments were of no value. The diſcourſes occaſioned a great outcry. Mr. Latimer was a preacher of ſome eminence, and began to diſplay remarkable addreſs in adapting his diſcourſes to the capacities of the people. The clergy now thought it high time to oppoſe him openly; and Dr. Buckingham, prior of the Black Friars, appearing in the pulpit a few Sundays after, with great pomp and prolixity attempted to ſhew the dangerous tendency of Mr. Latimer's opinions, particularly of the heretical notion of having the ſcriptures in Engliſh. Mr. Latimer liſtened with a ſecret pleaſure, and afterwards could not reſiſt his inclination to expoſe this ſolemn trifler. The whole univerſity met together on Sunday, when it was known Mr. Latimer would preach, and juſt before the ſermon began, prior Buckingham entered the church, and with an air of importance ſeated himſelf before the pulpit. Mr. Latimer, with great gravity, recapitulated the learned doctor's arguments, placed them in the ſtrongeſt light, and rallied them with ſuch a flow of wit and good humour, that without the leaſt appearance of ill-nature he made his adverſary in the higheſt degree ridiculous. He then, with great addreſs, appealed to the people on the low eſteem in which their holy guides had always held their underſtandings; expreſſed the utmoſt offence at their being treated with ſuch contempt, and wiſhed his honeſt countrymen might only have the uſe of the ſcriptures till they ſhewed themſelves ſuch ſad interpreters. He concluded his diſcourſe on a few obſervations on ſcripture metaphors; and, in ſhort, his ſermon had ſuch an effect, that the prior was for the future contented to ſhut himſelf up in his monaſtery. The credit of the proteſtant party thus increaſed at Cambridge, while Bilney and Latimer were at their head. The popiſh clergy and the heads of colleges were alarmed: frequent convocations were held, and the tutors were admoniſhed to have a ſtrict eye over their pupils; but Mr. Latimer continued to preach, and hereſy to ſpread. The heads of the popiſh party applied to the biſhop of Ely, who came to Cambridge, and was contented with ſilencing Mr. Latimer. But there happened to be then a proteſtant prior at Cambridge; this was Dr. Barnes, of the Auſtin Friars, which being exempt from the epiſcopal juriſdiction, he boldly licenſed Mr. Latimer to preach there. Thither this party followed him; and the late oppoſition having greatly excited the curioſity of the people, the friars chapel was ſoon incapable of containing the crowds that attended. Among others the biſhop of Ely was frequently one of his hearers, and had the ingenuity to declare, that Mr. Latimer was one of the beſt preachers he had ever heard. The credit to his cauſe, which our preacher had thus gained in the pulpit, he maintained out of it by a holy life. Mr. Bilney and he, not ſatisfied with acting unexceptionably, were daily giving inſtances of goodneſs, which malice could not ſcandalize, nor envy miſinterpret. Their adverſaries, impotent themſelves, and finding their dioceſan unwilling to execute their purpoſes, now carried their complaints to Henry VIII. who expecting to have his divorce ended in a regular way at Rome, took care to obſerve all the forms of civility with the pope. Immediately a court was erected by cardinal Wolſey, and Tunſtal being made preſident, Bilney, Latimer, and one or two more, were called before him. Bilney was prevailed upon to recant, and as Tunſtal omitted no opportunities of ſhewing mercy, Bilney bore his faggot and was diſmiſſed. The reſt eſcaped on eaſier terms; and all of them returning to Cambridge, were received with open arms by their friends. Bilney, however, filled with remorſe, grew melancholy, and three years after, reſolving to expiate his abjuration, went to Norfolk, and preaching publickly againſt popery, was executed at Norwich. Bilney's ſufferings ſeemed to inſpire the leaders of the Reformation at Cambridge with new courage, and Mr. Latimer wrote a letter to the king againſt a proclamation which had been juſt publiſhed, forbidding the uſe of the Bible in Engliſh, and other books on religious ſubjects, which the king received with temper; and ſoon after Dr. Butts, the king's phyſician, being ſent to Cambridge to promote the eſtabliſhment of the king's ſupremacy, the zeal Mr. Latimer ſhewed on this occaſion, rivetted him in the royal favour, and he obtained a benefice in Wiltſhire, to which he retired, and not only entered on the duty of his pariſh, but extended his labours throughout the country. But the clergy being ſoon inflamed againſt him, he was cited by Stokeſley, biſhop of London, to appear before him, and on his appealing to his own ordinary, another citation was obtained out of the archbiſhop's court. He ſet out for the capital in the depth of winter, under a ſevere fit of the ſtone and cholic. On his arrival, he found that inſtead of being examined, as expected, about his ſermons, a paper was put into his hands, which he was ordered to ſubſcribe, declaring his belief in the efficacy of the maſſes for the ſouls in purgatory, of prayers to the ſaints, of pilgrimages to their ſepulchres, &c. but he refuſed to ſign it, and was diſmiſſed with a copy of the articles. He was now regularly ſent for three times a week, and tired out with the moſt captious queſtions: but at length a ſtop was put to their proceedings, by an order from the king, and he was ſoon after made biſhop of Worceſter. It was then uſual for the biſhops to make preſents to the king of a purſe of gold on New-Year's-Day: but Latimer, inſtead of the purſe, preſented Henry a New Teſtament, in which was a leaf doubled down to this paſſage, "Whoremongers and adulterers God will judge." He was ſoon after ſummoned to parliament, when the famous act of the ſix articles being paſſed, which gave an univerſal alarm to all the favourers of the Reformation, he reſigned his ſee, and retired into the country. But being afterwards bruiſed by the fall of a tree, he was obliged to come to London to obtain the aſſiſtance of the moſt ſkilful ſurgeons, when having loſt his patron lord Cromwell, he was ſent to the Tower, where he was impriſoned during ſix years: but upon the change of the government under Edward VI. was ſet at liberty. He might now have reſumed his ſee, but this he declined, and ſpent above two years with archbiſhop Cranmer, at Lambeth, where he was chiefly employed in hearing the complaints and redreſſing the injuries of the poor. In the beginning of queen Mary's reign he was cited to appear before the council; he therefore ſet out immediately, and as he paſſed through Smithfield, where the ſuppoſed heretics were uſually burned, ſaid chearfully, "This place has long groaned for me." He was loaded with reproaches by the council, and ſent to the Tower, where his uſual chearfulneſs did not forſake him; for a ſervant leaving his apartment, Mr. Latimer bid him tell his maſter, that if he did not take better care of him, he ſhould certainly eſcape him. Upon this meſſage the lieutenant, with ſome diſcompoſure in his countenance, came to deſire an explanation, when Mr. Latimer anſwered, "I ſuppoſe, Sir, you expect that I ſhall be burnt; but if you do not allow me a little fire this froſty weather, I ſhall be ſtarved." At length Cranmer and Ridley, who were priſoners in the ſame cauſe, were ſent with Latimer to Oxford, in order to hold a public diſputation, but were confined in the common gaol, and denied the uſe of books, pens, ink, and paper; and the diſpute being ended, ſentence was paſſed upon them, and he was ordered to be executed, on the 16th of October. When he and Ridley being brought to a fire, lighted on the north ſide of Baliol college, a ſermon was preached, after which Mr. Latimer, throwing off his priſon attire, appeared in a ſhroud, and having recommended his ſoul to God, delivered himſelf to the executioner, ſaying to the biſhop of London, "We ſhall this day, my lord, light ſuch a candle in England, as ſhall never be extinguiſhed."

LATIN, a dead language, firſt ſpoken in Latium, and afterwards at Rome; and ſtill uſed in the Romiſh church, and among many of the learned. This language is principally derived from the Greek, and particularly from the Eolic dialect of that tongue, though it has a great number of words which it borrowed from the languages of the Etruſci, Oſci, and other ancient people of Italy; and foreign commerce and wars, in courſe of time, added a great many more. The Latin is a ſtrong nervous language, perfectly ſuitable to the character of the people who ſpoke it: we have ſtill works of every kind, admirably well written in the Latin, though there are vaſt numbers loſt. The Latin is more figurative than the Engliſh, more harmonious than the French, leſs copious than the Greek, leſs pompous than the Spaniſh, leſs delicate than the Italian, but cloſer and more nervous than any of them. The Latin tongue was for a while confined almoſt wholly within the walls of Rome; nor would the Romans allow the common uſe of it to their neighbours, or to the nations they ſubdued: but, by degrees, they in time became ſenſible of the neceſſity of its being generally underſtood, for the conveniency of commerce; and accordingly uſed their endeavours that all the nations ſubject to their empire, ſhould be united by one common language, ſo that at length they impoſed the uſe of it, by a particular law for that purpoſe. After the tranſlation of the ſeat of the empire

pire from Rome to Conſtantinople, the emperors of the Eaſt being always deſirous of retaining the title of Roman emperors, appointed the Latin to be ſtill uſed; but at length neglecting the empire of the Weſt, they abandoned all the care of the Latin tongue, and uſed the Greek. Charlemagne coming to the empire of the Weſt, revived this language; but at length it gave way, and the French took place of the Latin. The Latin, however, was prodigiouſly degenerated; for the incurſions of the Goths and Vandals brought an inundation of foreign words into it. But that was not all: when it once got into the courts of juſtice, it was ſtill worſe handled; till at laſt, being introduced amongſt the monks, it was debauched to that degree, that it was almoſt ſcandalous to uſe it. In this condition it was found at the Reformation, when Lud, Vives, Eraſmus, &c. began to open the way for its recovery, ſince which time endeavours have been uſed to retrieve the pure Latinity of the Auguſtan age. See *Language*.

LATITAT, in law, a writ whereby all men in perſonal actions are called originally to the king's-bench: it is ſo called, as the defendant is ſuppoſed to lurk and cannot be found in the county of Middleſex to be taken by bill; but is gone to ſome other county, to the ſheriff of which this writ is directed, commanding him to apprehend the defendant there.

LATITUDE, in geography, the diſtance of any place from the equator, meaſured in degrees, minutes and ſeconds, upon the meridian of that place; and is either north or ſouth, according as the place is ſituated either on the north or ſouth ſide of the equator. The latitude of a place is always equal to the elevation of the pole above the horizon. For the method of finding the latitude of a place from obſervations of the ſun or ſtars, ſee *Obſervation*.

Complement of the LATITUDE, in geography, is the number of degrees, minutes, and ſeconds, which, added to the latitude, make it equal to 90°. Thus the complement of the latitude of London is 38° 21′; for 38° 28′ added to 51° 32′ is equal to 90°.

The complement of the latitude is always equal to the elevation of the equator above the horizon, or the angle intercepted between the plane of the equator and the plane of the horizon.

Circles of LATITUDE, in aſtronomy, are ſecondaries to the ecliptic, or circles drawn on the ſphere of the heaven, perpendicular to the ecliptic, and interſecting each other in the poles of the ecliptic.

LATITUDE *of a ſtar or planet*, in aſtronomy, is its diſtance from the ecliptic in degrees, minutes, and ſeconds, meaſured on the circle of latitude drawn through that ſtar or planet, and may be either north or ſouth, as the object is ſituated either on the north or ſouth ſide of the ecliptic. The ecliptic is drawn on the common celeſtial globes, by which we may ſee what conſtellations it paſſes through; there are alſo uſually ſix circles of latitude, which by their mutual interſections ſhew the poles of the ecliptic, as well as divide it into twelve equal parts, anſwerable to the numbers of months in a year. From what has been ſaid it appears, that we muſt carefully diſtinguiſh the different notions of latitude, when applied to ſtars in the heaven, or places on the earth; that is, between latitude in aſtronomy, and latitude in geography; for in the heaven, or upon the celeſtial globe, it is the diſtance from the ecliptic; but upon the earth, or upon the terreſtrial globe, it is the diſtance from the equator. Indeed, ſometimes we conſider the diſtance of the heavenly bodies from the celeſtial equator; but this is called declination. See *Declination*.

The latitude of a planet is either heliocentric, or geocentric.

Heliocentric LATITUDE *of a planet* is the latitude it would appear in to a ſpectator placed in the ſun.

Geocentric LATITUDE *of a planet* is the latitude it appears in to an inhabitant of the earth.

North aſcending LATITUDE *of the Moon*, when ſhe proceeds from the aſcending node towards her northern limit, or greateſt elongation.

North deſcending LATITUDE is when the moon returns from her northern limit to the deſcending node.

South deſcending LATITUDE, when ſhe proceeds from the deſcending node to her ſouthern limit.

South aſcending LATITUDE, when ſhe returns from her ſouthern limit to her aſcending node.

And the ſame things hold good of the other planets.

LATITUDINARIAN, a perſon of moderation, with regard to religious opinions, who believes there is a latitude in the road to heaven, which may admit people of different perſuaſions.

LATTEN, a name formerly given to the plates of iron covered with tin, and now uſually called tin, of which our mugs, tea-canniſters, and the like, are made. The method of preparing thoſe plates of tin, as they are called, is as follows: Plates of iron are prepared of a proper thinneſs; theſe are cut into ſquares fitted to receive the tinning; but it is not every kind of iron that will ſerve for this purpoſe, but only ſuch as is moſt diſtenſible, eaſily beating out to any degree of thinneſs when hot, and malleable even when cold, without danger of flying to pieces. Of this the Germans have large quantities, which they always ſelect for this purpoſe. This ſort of iron is firſt formed into ſquare bars of an inch in diameter; theſe they beat out a little into flatneſs, and then cut into pieces, which they call ſemelles or ſoles. They fold theſe together, and having made them into parcels, containing forty pieces each, they beat them all at once with a hammer which weighs ſix or ſeven hundred weight. When they have done this, the principal part of the whole work is to prepare the leaves, now beat out to a proper thinneſs, ſo as that they ſhall readily receive the tin; for if there be but the ſmalleſt particle of duſt on them, or only the ſlighteſt ruſt in any part, the tin will never fix there. This ſmoothing of the plates may be brought about by filing them; but that would be too expenſive, wherefore they do it by ſteeping them in acid waters. Thus preparing a great number at a time, they leave them in this liquor till the ſurface is a little preyed upon by it, and then they are ſcowered with ſand, which makes them very ſmooth and fine. There are other methods of making the iron ruſt; but whatever method is uſed, it is always neceſſary to ſcower them with ſand as ſoon as it is done; and when they are thus cleaned, they muſt be immediately plunged into water, to prevent their ruſting again; and they are to be left in this water till the inſtant in which they are to be tinned, or, in the language of the workmen, blanched. The people employed in this part of the operation are called blanchers, and the others, who aſſiſt at the cleaning the plates, the ſcalers. The Germans uſe no ſort of preparation of the iron to make it receive the tin, more than the keeping it always ſteeped in water till the time; only when the tin is melted in the crucible, they cover it with a layer of a ſort of ſuet, which is uſually two inches thick, and the plate muſt paſs through this before it can come to the melted tin. The firſt uſe of this covering is to keep the tin from burning; as, if any part ſhould take fire, the ſuet would moiſten it, and reduce it to its primitive ſtate again. The blanchers ſay, this ſuet is a compounded matter. It is indeed of a black colour, and the whole ſecret of blanching was found to lie in the preparation of it; which was at length diſcovered to conſiſt only in the firſt frying and burning it. This ſimple operation not only gives it the colour, but puts it into condition to give the iron a diſpoſition to be tinned, which it does ſurpriſingly.

The melted tin muſt alſo have a certain degree of heat; for if it is not hot enough, it will not ſtick to the iron; and if it is too hot, it will cover it with too thin a coat, and the plates will have ſeveral colours, as red, blue, and purple, and upon the whole, will have a caſt of yellow. To prevent this, by knowing when the fire has a proper degree of heat, they might try with ſmall pieces of iron; but, in general, uſe teaches them to know the degree, and they put in the iron when the tin is at a different ſtandard of heat, according as they would give it a thicker or a thinner coat. Sometimes alſo they give the plates a double layer, as they would have them very thickly covered. This they do by dipping them into the tin, when very hot, the firſt time, and when leſs hot, the ſecond. The tin which is to give the ſecond coat muſt be freſh covered with ſuet, and that with the common ſuet, not prepared. *Phil. Tranſ.* No. 106.

LATTEN BRASS, plates of milled braſs, reduced to different thickneſs, according to the uſes it is intended for.

LATUS *Rectum*, in conics, the ſame with parameter.

LATUS TRANSVERSUM *of the Hyperbola*, a right line intercepted between the vertices of the two oppoſite ſections; or that part of the common axis which is between the vertices of the upper and lower cones.

Such is the line E D (plate XXVII. fig. 1.) where alſo D *d* and E *e* may be the parameters or latus rectums belonging to the two oppoſite ſections D L R O and O E O R.

To this latus tranſverſum anſwers the longeſt diameter in the ellipſis, which Apollonius calls the tranſverſe axis or diameter.

LATUS PRIMARIUM, a right line belonging to a conic ſection, drawn through the vertex of the ſection of the cone, and within it, as the line E E or D D, fig. 1.

LAVANDULA, lavender, in botany, a ſhrubby plant, with its leaves ſet in pairs, the ſtalks ſquare when young, and round when grown woody; producing on the tops of the branches naked ſpikes of blue labiated flowers, of which the upper lip is erect and cloven, the lower divided into three roundiſh ſegments.

LAVANDULA *Minor ſive ſpica*, lavender with oblong, very narrow, ſomewhat hoary, undivided leaves; a native of dry gravelly ſoils in the ſouthern parts of Europe, common in our gardens, and flowering in July. The flowers of lavender have a fragrant ſmell, to moſt people agreeable, and a bitteriſh, warm, ſomewhat pungent taſte: the leaves are weaker, and leſs grateful. They are often employed as a perfume; and medicinally, as mild ſtimulants and corroborants, in vertigoes, palſies, tremors, and other debilities of the nervous ſyſtem, both internally and externally. The flowers are ſometimes taken in the form of conſerve; into which they are reduced, by beating them, while freſh, with thrice their weight of double-refined ſugar. Their fragrance is leſs injured by beating or bruiſing them than moſt of the other odoriferous flowers, but is nevertheleſs conſiderably diminiſhed: the flavour of the leaves is of a much leſs deſtructible kind. Compound ſpirits of lavender, in which other aromatics are joined to the lavender, have been diſtinguiſhed by the name of Engliſh or palſy drops. The college of London directs three pints of the ſimple ſpirit of lavender, and one pint of ſpirit of roſemary, to be digeſted on half an ounce of cinnamon, half an once of nutmegs, and three drams of red ſaunders, as a colouring ingredient: the college of Edinburgh orders a gallon and a half of rectified ſpirit of wine to be drawn over from three pounds of freſh lavender flowers, one pound of thoſe of roſemary, and three ounces of lemon-peel; and afterwards three ounces of cinnamon, one of cloves, one of cubebs, and two of red ſaunders, to be macerated for three days in the diſtilled ſpirit. Theſe preparations are taken internally, on ſugar, or in any convenient vehicle, from ten to an hundred drops, and uſed externally in embrocations, &c.

LAVANDULA *Major ſive vulgaris*, broad lavender, with longer, wider, and hoarier leaves, and much larger ſpikes, though ſmaller flowers: common in the ſouthern parts of Europe, but rare among us. The name ſpike is applied by foreign writers to this ſpecies, by ſome of ours to the firſt.

* LAUD (William) archbiſhop of Canterbury, the ſon of a clothier of Reading, in Berkſhire, was born on the 7th of October 1573, and educated at Oxford. In 1600 he was ordained deacon, and in 1601 prieſt. In 1603 he was choſen proctor of the univerſity of Oxford, and the ſame year made chaplain to Charles Blount, earl of Devonſhire. In 1607 he was inducted into the vicarage of Stanford in Northamptonſhire, and in the following year had North-Kilworth, in Leiceſterſhire, given him. In 1608 he took the degree of doctor of divinity, and the ſame year was made chaplain to Dr. Richard Neal, biſhop of Rocheſter. After ſeveral other preferments, he was in 1620 made prebendary of Weſtminſter, and the next year biſhop of St. David's. In 1626 he was tranſlated to the ſee of Bath and Wells, and made dean of the royal chapel; and next year privy-counſellor to his majeſty. In 1628 he was tranſlated to the ſee of London; and in 1630 elected chancellor of Oxford. From this time he made it his buſineſs to adorn that univerſity, and beginning with St. John's college, where he was educated, built all the inner quadrangle, except a part of the ſouth ſide. He then erected that elegant pile of building at the weſt end of the divinity ſchool, in which is the convocation-houſe, and Selden's library. He alſo gave the univerſity, at ſeveral times, one thouſand three hundred manuſcripts in various languages, which he had purchaſed at a prodigious expence. After the murder of the duke of Buckingham, Dr. Laud became chief favourite to king Charles I. which whilſt it augmented his power and intereſt, increaſed the envy and hatred he had raiſed againſt him. The ſuperſtitious ceremonies he uſed in the conſecration of St. Catherine Cree church, London, the 6th of January 1630-1, gave great diſguſt; and his zeal in the proſecutions carried on in the high commiſſion and ſtar-chamber courts, againſt authors, printers, and divines, filled the minds of the people with reſentment. But the proſecution of the king's printers, for leaving out the word

not in the ſeventh commandment, in an edition of the Engliſh bible, gave great offence, though it was doubtleſs done without deſign. In 1633 he attended the king into Scotland, and was ſworn a privy-counſellor for that kingdom. During his ſtay in Scotland, he formed the reſolution of bringing that church to an exact conformity with the church of England. In the ſame year he ſucceeded archbiſhop Abbot in the ſee of Canterbury. In 1634, and the following year, the archbiſhop, by his vicar-general, performed his metropolitical viſitation, in which, among other things, the church-wardens in every pariſh were enjoined to remove the communion table from the middle to the eaſt end of the chancel, altar-wiſe, the ground being raiſed for that purpoſe, and to fence it with proper rails. On the 5th of February 1634-5, he was put into the great committee of trade, and the king's revenue; on the 4th of March following, appointed one of the commiſſioners of the treaſury; and on the 6th of March 1635-6, he received the ſtaff of lord high-treaſurer of England. A new parliament being ſummoned, met the 13th of April 1640, and the convocation the day following: but the commons launching out into complaints againſt the archbiſhop, and inſiſting upon a redreſs of grievances before they granted any ſupply, the parliament was diſſolved the 7th of May. The convocation however continued ſitting, and made ſeventeen canons, which were ſuppoſed to be formed under the immediate direction of the archbiſhop. In the beginning of the long parliament he was attacked on account of thoſe canons, and they being condemned by the houſe of commons on the 16th of December 1640, “as containing many “things contrary to the king's prerogative, “to the fundamental laws and ſtatutes of this realm, to the rights of “parliament, to the property and liberty “of the ſubject, and tending to ſedition, “and of dangerous conſequence;” he was, on the 18th of December, accuſed by the commons of high treaſon, upon which he was committed to the cuſtody of the uſher of the black rod, and on the 1ſt of March ſent to the Tower; and being at length tried before the houſe of lords, for endeavouring to ſubvert the laws, and to overthrow the Proteſtant religion, was found guilty, and beheaded on Tower-hill, Friday the 10th of January 1644-5, in the 72d year of his age. This learned prelate was temperate in his diet, and regular in his private life; but his fondneſs for introducing new ceremonies, in which he ſhewed a hot and indiſcreet zeal, his encouraging ſports on Sundays, his illegal and cruel ſeverity in the ſtar-chamber and high-commiſſion courts, and the fury with which he perſecuted the diſſenters, and all who preſumed to contradict his ſentiments, expoſed him to popular hatred. Though he was charged with a deſign to introduce Popery, his anſwer to Dr. Fiſher was the beſt ever printed againſt that religion.

LAUDANUM, a preparation of opium. See the article *Opium*.

LAVER, a ſacred utenſil in the temple of Jeruſalem, conſiſting of a baſon, whence they drew water by cocks.

LAUNCH, among ſailors, a ſort of boat uſed by the French, Italian, and Spaniſh ſhips; and is peculiar to thoſe which are employed in the Mediterranean trade, being better fitted for the ports of that ſea than a long-boat, than which it is generally much longer, and more flat-bottomed, and alſo ſharper before.

LAUNCHING *a Ship or Boat*, puſhing them into the water from an aſcent.

When the ſhips of the ancients, particularly thoſe of Greece, were launched, they were ornamented with garlands and flowers; the mariners alſo adorned with crowns, who ſhouted with loud acclamations, and other expreſſions of mirth and joy; and being purified by a prieſt, with a lighted torch, and egg and brimſtone, or after ſome other manner, were conſecrated to the god whoſe image they bore. In the launching of ſhips now-a-days, the ſame or ſimilar expreſſions of joy and feaſting are uſed, colours are diſplayed, and ſometimes muſic performed.

LAURA, in church-hiſtory, a name given to a collection of little cells, at ſome diſtance from each other, in which the hermits in ancient times lived together in a wilderneſs.

Theſe hermits did not live in community, but each monk provided for himſelf in his diſtinct cell. The moſt celebrated lauras mentioned in eccleſiaſtical hiſtory were in Paleſtine; as the laura of St. Euthymius, at four or five leagues diſtance from Jeruſalem; the laura of St. Saba, near the brook Cedron; the laura of the Towers, near the river Jordan, &c.

LAUREATION, in the univerſities of Scotland, ſignifies the act of taking the degree of maſter of arts, which the ſtudents are permitted to do after four years ſtudy.

LAURENCE, or *Canons regular of St.* LAURENCE, a religious congregation in France, ſaid to have been founded by St. Benedict.

LAW denotes the command of ſome perſon or power, whoſe precept carries along with it the reaſon of obedience. The word is derived from the Saxon *lah*, which ſignifies the ſame thing. Thus the commands of God, a city, ſtate, or ſovereign power, are called their laws.

As all human actions depend upon the will, and the will of every ſingle man is different; therefore to preſerve decency and order among mankind, there ſhould be ſome rule by which they are to be regulated; for otherwiſe it could not but give occaſion to vaſt confuſions. See *Government*.

This rule or law is nothing but a decree, by which the ſuperior obliges thoſe ſubject to him to accommodate their actions to the directions preſcribed therein. But that a law may exert its force in the minds of thoſe to whom it is promulgated, it is requiſite that the law-giver and the law be likewiſe known. The legiſlator of the laws of nature can be no other than the Creator of the univerſe. No man in civil ſociety can be ignorant who it is that has power over him; and of the laws he has notice given him, by a publication plainly and properly made, in which theſe two things ought to be aſcertained, that the author of the law is he who hath the ſupreme authority in the community, and that this or that is the true meaning of the law. The firſt is known, if it be promulged with his own mouth, under his own hand, or if it be done by proper delegates regularly admitted to that office: they muſt be thus judiciouſly executed, and, beſides that, contain nothing derogatory to the ſovereign power. As to the true ſenſe, after the greateſt plainneſs uſed by the promulgers, an explication is to be ſought of the legiſlator, or thoſe who are publickly appointed to give judgment according to law. See *Judge*.

Every perfect law has two parts; the one directing what is to be done, or omitted; the other declaring the puniſhment incurred, by neglecting to do what is commanded, or attempting what is prohibited. And herein all the force of law conſiſts. See *Puniſhment*.

Law may be divided, with reſpect to its authors, into divine and human: the former may be conſidered as two-fold, natural or moral, and poſitive. Natural law is that which God has made known to mankind by the light of natural reaſon. Poſitive law is that which he has revealed by his prophets; ſuch were the laws delivered to the Jews relating to the divine worſhip and polity peculiar to that people.

Civil or human laws, conſidered with reſpect to the legiſlator's two offices, of judging and compelling, may be divided into diſtributive and penal. Diſtributive law is that which gives every ſubject what properly belongs to him, forbidding others to injure him either in his privileges or property: and penal law is that which determines or appoints what puniſhments ſhall be inflicted on thoſe who violate the diſtributive laws; it is mandatory, and ſpeaks only to the public officers, or magiſtrates. The laws of any kingdom, or ſtate, firſt began with the ſtate itſelf; and if we conſider the world as one univerſal ſociety, or Europe as one great commonwealth, the law by which ſeparate nations are governed, with reſpect to treaties, alliances, the ſending ambaſſadors, &c. is called jus gentium, or the law of nations; but when it is conſidered as made up of particular ſtates, the law which regulates the public order of each is called jus publicum; and that law which determines the private rights of men is called jus civile, or civil law. See *Civil Law*.

The laws of England are at preſent divided into the common law, which is the moſt ancient law of the kingdom; the ſtatute law, made by the king and both houſes of parliament; and particular cuſtoms in ſeveral parts of the kingdom: but our laws are more largely divided into the crown law; the law and cuſtom of parliament; the common law; the ſtatute law; reaſonable cuſtoms; the law of arms; eccleſiaſtical or canon law; the civil law; the foreſt law; the law of marque and repriſals; the law of merchants; martial law, &c. See *Statute*, *Parliament*, &c.

Our laws have great reſpect to life, liberty, freehold, and inheritance; their uſe is to ſecure the continuance of thoſe bleſſings we enjoy; and they have therefore a particular relation to perſons and their eſtates, to crimes and miſdemeanors, &c. See *Eſtate*, *Crime*, &c.

LAW *of arms*, a law which gives precepts how to proclaim a war, to attack the enemy, and to puniſh offenders in the camp.

LAWS *of Nature or Motion*, in phyſics, axioms or general rules of motion and reſt, obſerved by all natural bodies in their actions on one another; of theſe Sir Iſaac Newton has eſtabliſhed the three following.

1. All bodies continue their ſtate of reſt or uniform motion in a right line, till they are made to change that ſtate by ſome external force impreſſed upon them.

This law is no other than that univerſal property of bodies, called paſſiveneſs or inactivity: whereby they endeavour to continue the ſtate they are in, whatever it be. Thus a top only ceaſes to run round on account of the reſiſtance it meets with from the air, and the friction of the plane whereon it moves. And a pendulum, when left to vibrate in vacuo, where there is nothing to ſtop it but the friction ariſing from the motion of the pin on which it is ſuſpended, continues to move much longer than in the open air.

2. The change of motion, produced in any body, is always proportionable to the force whereby it is effected; and in the ſame direction wherein that force acts.

This is an immediate conſequence of this axiom, the effect is always proportionable to its cauſe. For inſtance, if a certain force produces a certain motion, a double force will produce double the motion, a triple force triple the motion, &c. If a body is in motion, and has a new force impreſſed on it in the direction wherein it moves, it will receive an addition to its motion proportional to the force impreſſed; but if the force acts contrary to its motion, the body will then loſe a proportional part of its motion: again, if the force is impreſſed obliquely, it will produce a new direction in the motion of the body, more or leſs different from the former, in proportion to its quantity and direction.

3. Re-action is always contrary and equal to action; or the actions of two bodies upon each other are equal, and in contrary directions.

Thus, ſuppoſe a ſtone or other load to be drawn by a horſe; the load re-acts upon the horſe as much as the horſe acts upon the load; for the harneſs, which is ſtretched equally between them both ways, draws the horſe towards the ſtone as much as it does the ſtone towards the horſe; and the progreſſive motion of the horſe is as much retarded by the load, as the motion of the load is promoted by the endeavours of the horſe.

LAWN, a large plain in a park, or adjoining to ſome grand ſeat. The moſt convenient ſituation is on the ſouth or ſouth-eaſt ſide of the houſe. If the lawn be a ſquare, three avenues may break out from three of the angles, and meet in the fourth angle oppoſite to the houſe: it may be bounded with walks or a ſingle row of lime-ſet trees, at a good diſtance from one another. A circle is a good figure for a lawn, but muſt break off before it comes againſt the front. A triangle is a very proper figure, but ſhould be obtuſe or right-angled next the front. Many perſons have preferred the lime-tree for this purpoſe, on accouut of their regular growth; but as the leaves of this tree often change their colour, and begin to fall very ſoon in the autumn, occaſioning a great litter in the garden; and from the end of July the trees make but an indifferent appearance; ſo they are not to be eſteemed for theſe plantations.

The elm, oak, beech, and cheſnut, among the deciduous trees, are to be preferred to all others, as they keep their leaves late in autumn: and theſe are all of them large-growing trees, ſo are very proper for this purpoſe.

If there are ſome clumps of ever-green trees intermixed with the deciduous trees in this plantation, it will add to the beauty of it, eſpecially in the winter ſeaſon: the beſt ſorts for this purpoſe are, the lord Weymouth's pine, the ſilver and ſpruce firs, which will grow faſt, and become large trees: and as the two latter ſorts always grow pyramidically, ſo they will have a good effect to the ſight, when properly diſpoſed with the deciduous trees: but as theſe generally feather out their branches near the ground, they ſhould be planted where they do not obſtruct the view of any diſtant objects. *Miller's Gardener's Dict.*

LAXATIVE MEDICINES, ſuch as regard either the belly or entire habit, and produce this effect by ſome ſoftening quality that takes away the tenſity of the fibres, and facilitates the paſſage of the contents in the internal tube.

LAY-BROTHERS, among the Romaniſts, thoſe pious but illiterate perſons who devote themſelves in ſome convent to the ſervice of the religious.

LAY LAND, or **LEY LAND**, in huſbandry, fallow-ground, or ſuch as lies untilled.

LAY-MAN, one who follows a ſecular

lar employment, or has not entered into holy orders.

LAYERS, in gardening, are tender ſhoots or twigs of trees, laid or buried in the ground, till having ſtruck root, they are ſeparated from the parent-tree, and become diſtinct plants. The manner of performing this operation is as follows.

1. Take ſome of the boughs, and lay them into the ground about half a foot deep in fine freſh mould, leaving them with the end of the layer about a foot or a foot and a half out of the ground, and keep them moiſt during the ſummer-ſeaſon, and they will probably have taken root, and be fit to remove in autumn; if they have not by that time taken root, and they muſt lie longer.

2. Tie a piece of wire hard round the bark of the bough, at the place you intend to lay in the ground; and twiſt the ends of the wire, ſo that they may not untie; and prick the place above the wire, through the bark with an awl in ſeveral places; and then lay it in the ground, as before directed.

3. Cut a ſlit upwards at a joint, as is practiſed in laying of carnations, which by gardeners is called tonguing the layers.

4. Twiſt the place which you deſign to lay in the ground like a withy, and lay it into the ground, as directed in the firſt way of laying.

5. Cut a place round about the bough that is deſigned to be laid, an inch or two, at the place that is moſt convenient to lay into the ground, and manage it as is directed in the firſt method of laying.

The ſeaſon for laying hardy trees, that ſhed their leaves, is in October; but for ſuch as are tender, in March; for evergreens, June or Auguſt are good ſeaſons.

LAZARETTO, or LAZAR HOUSE, a public hoſpital for the reception of the ſick poor; and in ſome countries it is a detached edifice for perſons coming from places ſuſpected of the plague, to perform quarantine in.

LAZULA, or LAPIS LAZULI, a ſort of ſtone, from whence the celebrated colour called ultramarine is made. This is one of the ores of copper, the baſis of which is a debaſed cryſtalline matter, coloured with the elegant and beautiful blue, which this matter gives in our experiment to all alkaline liquors. It is a very hard and compact ſtone, inſomuch as to come into the rank of thoſe that take a high poliſh, and are not liable to be ſcratched by accidents; and therefore is worked into a number of different toys. It is found in detached lumps uſually of the ſize of a man's fiſt, often ſmaller, and ſometimes of four or five pounds weight: it is never covered with any coat or cruſt, but reſembles thoſe ſtones which have been waſhed off from whole ſtrata, and ſmoothed or rounded by accidents afterwards. It is of a naturally ſmooth, and gloſſy ſurface; and its general colour is the elegant colour already mentioned; but this is variegated in a very beautiful manner with ſpots or clouds of white, and with veins of a fine ſhining gold colour. It has theſe variegations, in different degrees, in ſeveral maſſes, and in general moſt to be valued, as it has leaſt of them; for though very beautiful to the eye, they are foreign to all the uſes they are put to, except when it is cut as a gem. The white clouds or veins, for this matter is ſometimes, though more rarely, diſpoſed of in the laſt form, are uſually of a dead and opake hue; but ſometimes they are bright and pellucid as cryſtal; this laſt ſtate of them adds greatly to the beauty of the ſtone: the yellow ones are always bright and gloſſy; they have been ſuppoſed by many to be veins of gold, and the ſtone has been thence called a gold ore; but they are in reality only marcaſite. Sometimes that gold-like matter is not diſpoſed in veins, but in ſpots and ſtars, and in this caſe the ſtone is the ſapphire of the ancients; for they knew the gem we call the ſapphire by a very different name, calling it the ſky-blue beryl; and deſcribing what they meant by the word ſapphire to be a ſtone, opake, of a fine blue, and variegated with ſpots of a gold colour in form of ſtars. All the variations of this ſtone are ſubject, beſides, to other accidental foulneſſes, and are ſometimes debaſed to the ſtate of a mere common blue copper-colour. The lapis lazuli is found in many parts of the world, but that of Aſia and Africa, in both which countries it is frequent, is vaſtly ſuperior, both in beauty and real value, to the Bohemian and German kind, which is brought too often to us in its place.

LEAD, *Saturn*, in natural hiſtory, a pale or livid white metal, ſoon loſing its brightneſs in the air, and contracting a blackiſh or greyiſh aſh-colour; very ſoft and flexible; unelaſtic, and unſonorous; the heavieſt of all metallic bodies but gold, quickſilver, and platina: it is upwards of eleven times heavier than an equal bulk of water. It melts in a very ſmall degree of fire, long before it grows red-hot: in a ſtrong red heat it emits viſible fumes. It loſes of its malleability in proportion as it is heated: by nimble agitation, when it is juſt ready to melt, or when returning from a fluid to a conſiſtent ſtate, it may be divided into ſmall grains, or powder. Granulated lead is commonly prepared, by pouring the melted metal into a wooden box rubbed on the inſide with chalk, and ſtrongly ſhaking it till it ſets or becomes ſolid; when large quantities are prepared, a wooden trough is made uſe of. It is formed into round granules or ſhot, by pouring the melted lead into cold water, through a perforated plate; a little orpiment being added to the metal in fuſion; this improves its hardneſs, and makes it run more regularly into globules without drawing a tail. All the calces and ſcoriæ of lead vitrify more eaſily than thoſe of any other metal: expoſed to a moderately ſtrong fire, they quickly run into a tranſparent yellow glaſs This glaſs, in fuſion, powerfully diſſolves and vitrifies the more refractory metallic calces and earths; and unleſs ſaturated with theſe kinds of additions, corrodes and ſinks through the common crucible. If gold or ſilver be mixed with lead, and expoſed to the fire, the lead ſcorifies, as it would by itſelf, and ariſes to the ſurface, ſo as to be raked off in the form of glaſs or litharge; at the ſame time carrying with it any imperfect metal that the gold and ſilver had been mixed with, but leaving thoſe perfect metals themſelves unhurt. Hence gold and ſilver are purified by means of lead from admixtures of the baſer metals; and hence lead is called by the chemiſts, *balneum ſolis & lunæ, lavacrum regis & reginæ, ſapo metallorum*, &c. The litharge met with in the ſhops is produced in thoſe works where gold and ſilver are thus purified; and contains the heterogeneous metals which the gold or ſilver had been mixed with. Lead expoſed for ſome time to the ſteam of vinegar or other vegetable acids, is gradually corroded into a white calx, which is the ceruſs or white lead of the ſhops. See *Ceruſs*. Lead is employed for various mechanic uſes; as in thin ſheets for covering buildings, for pipes, pumps, ciſterns, ſtatues, ſhot, bullets, windows, for ſecuring iron-bars in hard ſtones, for ſundry kinds of large veſſels for evaporation, and many other mechanic purpoſes. It has been obſerved that plants do not thrive ſo well in leaden, as in earthen and wooden veſſels. Its principal uſes in the chemical arts are, for promoting the vitrification of earthy and ſtony matters, in the making of glaſs, or in the ſmelting of ores, or in the glazing of earthen veſſels; for the refining of gold and ſilver; for the eliquation of ſilver from copper; for forming with oil the baſis of varniſhes and paints. The effects of lead on the human body are dangerous: thoſe who are expoſed to its vapours in the fire, and even thoſe who grind its calces, minium, ceruſs, and litharge, for the painters are ſubject to violent gripes and conſtipations of the bowels, contractions of the limbs, and other diſorders. Much more hurtful is the internal uſe of lead corroded or diſſolved by acids, as ceruſs, ſaccharum ſaturni, the ſolution in vinegar called acetum lithargyrii, or the tincture drawn from the ſaccharum, with ſpirit of wine, commonly called tinctura antiphthiſica. The ſaturnine preparations are applied externally with ſafety, as coolers, repellents, and deſiccatives: its calces, diſſolved in oils, form the baſis of moſt of the officinal plaſters. Culinary veſſels, lined with a mixture of tin and lead, which is the uſual tinning, are apt to communicate to acid foods pernicious qualities, and require to be uſed with great precaution. Lead is ſometimes found in the earth native, or in its metallic form, though very rarely pure. Its common ores are nearly of the colour of lead itſelf, and appear compoſed of cubes or parallelopipeds, ſometimes large and regular, ſometimes irregular and ſmall: There are lead ores alſo of a white, greyiſh, or greeniſh colour, and priſmatic figure; but theſe are rarely met with. The ores of ſilver, copper, and other metals, except tin and iron, have often a lead ore intermixed. The lead is extracted by fuſion in contact with the fuel; the furnace being ſufficiently heated with wood or charcoal, the powdered ore is thrown in by degrees, and freſh fuel and ore occaſionally ſupplied: the lead, revived by the inflammable matter of the coals, runs down into a baſon at the bottom of the furnace; from whence it is laded out, and caſt into iron mould, into large maſſes, called pigs of lead. All the common lead ores contain ſome ſilver and copper.

LEAF, a part of a plant, commonly very thin, and flat, growing in the ſpring, and falling off in autumn. Though there are ſome plants without leaves, as truffles and muſhrooms.

The diſtinction of leaves, made by thoſe who have written on botany, are the following.

A ſimple leaf is that which is not divided to the middle.

A compound leaf is divided into ſeveral parts, each reſembling a ſimple leaf, as in liquorice, &c.

A digitated leaf is a compound leaf divided into ſeveral parts, all of which meet together at the tail, as in the hemp, black hellebore, &c.

A trifoliated leaf is a digitated leaf, conſiſting of three fingers, as the trefoil, &c.

A quinquefoliated leaf is a digitated leaf, conſiſting of five fingers, as in the quinque folium.

A pennated leaf is a compound leaf divided into ſeveral parts, each of which is called a lobe, placed along the middle rib, either alternately, or by pairs. When the middle rib is terminated by an odd lobe, it is ſaid to be unequally pennated, as in the goats rue, &c. and equally pennated, when it is not terminated by an odd lobe, as in the caſſia; when the lobes are all nearly of the ſame form and bigneſs, it is called an uniform pennated leaf, as in the liquorice; when they are not ſo, it is ſaid to be difform, as in the agrimonia.

A winged leaf, is, as it were, divided into ſeveral pennated leaves, as in the orobus, &c.

A ramoſe leaf is that which is ſtill farther divided than the winged leaf, as in the oſmund royal, female fern, &c.

An entire leaf or lobe is that which has no diviſion on its edges, as in the apple-tree, &c.

A ſinuated leaf is that which is cut about the edges into ſeveral long ſegments, as in common mallows.

A ſerrated leaf is that which is cut about the edges into ſeveral acute ſegments, reſembling the teeth of a ſaw, as in the nettle, &c.

A crenated leaf is that which is cut about the edges into ſeveral obtuſe ſegments, as in the betony, &c.

A laciniated or jagged leaf is that which is cut about the edges into ſeveral pretty deep portions, in an irregular manner, as in the horned poppy, &c. *Miller's Gardener's Dictionary.*

The leaves of plants are of the utmoſt conſequence to the life of the whole. Air evidently paſſes in at the leaves, and goes through the whole plant, and out again at the roots. If the leaves have no air, the whole plant will die, as is eaſily proved by the air-pump; but in theſe experiments, if the leaves be left on the outſide of the receiver, and parted by a hole cemented with wax, and have air, the plant will thrive, and grow, though its roots and ſtalk are kept in vacuo in water. The leaves of plants perform the neceſſary work of altering the water received in at the roots, into the nature of the juices of the plant; and hence it is, that the life of the plants depends ſo immediately upon their leaves. The huſbandman often ſuffers for want of this knowledge. A crop of ſaintfoin is a very valuable thing, and its root being perennial, will yield him increaſe many years; but it is often deſtroyed at firſt, by ſuffering it to be indiſcreetly fed upon by the ſheep, which eating up all the leaves, the root remains without the means of a ſupply of air, and the whole periſhes. Leaves being thus neceſſary to plants, nature has, in all perennial plants, provided a reverſionary ſtock of them. The leaves of theſe plants are always formed in autumn, though they are not unfolded till the following ſpring. They then open and increaſe gradually, in proportion to the motion of the ſap, and the quantity of pabulum it then receives to be circulated. Theſe leaves may alſo, though not wholly appearing out of the bud, be ſufficient for the extremely ſmall motion of life, which the ſap of perennial plants, that drop their leaves, has in winter. *Tull's Horſe-hoeing Huſbandry.*

The leaves of many kinds of herbs and trees give a yellow dye to wool or woollen cloth that has been previouſly boiled with a ſolution of alum and tartar: weld in particular affords a fine yellow, and is commonly made uſe of for this purpoſe by the dyers, and cultivated in large quantity in ſome parts of England. There is no colour for which we have ſuch plenty of materials as for yellow. Mr. Hellot obſerves, in his *Art de Teindre*, that all leaves, barks, and roots, which on being chewed diſcover a ſlight aſtringency, as the leaves of the almond, peach, and pear-trees, aſh bark, eſpecially that taken off after the firſt riſing of the ſap in ſpring, the roots of wild patience, &c. yield durable yellows, more or leſs beautiful, according to the length of time that the boiling is continued, and the proportions of alum and tartar in the preparatory liquor.

LEAGUE, a meaſure of length, containing more or leſs geometrical paces, according to the different uſages and cuſtoms of countries. A league at ſea, where it is chiefly uſed by us, being a land meaſure moſtly peculiar to the French and Germans, contains three thouſand geometrical paces, or three Engliſh miles. The French league ſometimes contains the ſame meaſure, and in ſome parts of France it conſiſts of three thouſand five hundred paces: the mean or common league conſiſts of two thouſand four hundred paces, and the little league of two thouſand. The Spaniſh leagues are larger than the French, ſeventeen Spaniſh leagues making a degree, or twenty French leagues, or ſixty-nine and an half Engliſh ſtatute miles. The Dutch and German leagues contain each four geographical miles. The Perſian leagues are pretty near of the ſame extent with the Spaniſh; that is, they are equal to four Italian miles; which is pretty near to what Herodotus calls the length of the Perſian paraſang, which contained thirty ſtadia, eight whereof, according to Strabo, make a mile.

League alſo denotes an alliance or confederacy between princes and ſtates for their mutual aid, either in attacking ſome common enemy, or in defending themſelves.

LEAK, among ſailors, a cranny or hole through which water enters into a ſhip either through her deck or ſides.

LEAKAGE, the ſtate of a veſſel that leaks, or lets water, or other liquor, ouze in or out.

Leakage, in commerce, an allowance of 12 per cent. in the cuſtoms, allowed to importers of wines for the waſte and damage it is ſuppoſed to have received in the paſſage: an allowance of two barrels in twenty-two is alſo made to the brewers of ale and beer, by the exciſe-office.

LEAP-YEAR, the ſame with biſſextile. See *Biſſextile*.

LEASE, in law, a demiſe or letting of lands, tenements, or hereditaments unto another for life, term of years, or at will, for a rent reſerved.

LEASE and RELEASE, as uſed in our law, ſignifies a certain inſtrument, in writing, for the conveyance of a right or intereſt in lands and tenements in fee to another.

LEASH, among ſportſmen, denotes three creatures of any kind; but chiefly greyhounds, foxes, bucks, and hares. The term leaſh alſo ſignifies a line to hold in a hunting dog; and a ſmall long thong of leather, by which a falconer holds his hawk.

LEATHER, the ſkin of ſeveral kinds of beaſts dreſſed and prepared for the uſe of the various manufacturers, whoſe buſineſs is to make them up. The butcher and others, who flay off their hides or ſkin, diſpoſe of them raw or ſalted to the tanner and tawer, and they to the ſhamoy, morocco, and other kind of leather-dreſſers, who prepare them according to their reſpective arts, in order to diſpoſe of them among the curriers, glovers, harneſs-makers, coach-makers, ſadlers, breeches-makers, gilt-leather-makers, chair-makers, ſhoe-makers, book-binders, and all in any way concerned in the article of leather. The three principal aſſortments of leather are tanned or tawed, and oil and alum-leather; and it may be affirmed, with great truth, that the ſkins of our own production, and thoſe imported from our colonies, when dreſſed in this kingdom, make the beſt leather in the world, and that therefore this is an article of great importance to the trade of the nation.

LEAVEN, a piece of ſour dough, uſed to ferment and render light a much larger quantity of dough or paſte.

LECTICA, in Roman antiquity, a vehicle in which people were carried in a reclining poſture.

LECTURERS, in England, are an order of preachers in pariſh churches, diſtinct from the rector or vicar. They are choſen by the veſtry, or chief inhabitants of the pariſh, and are uſually the afternoon preachers.

LEDGER, the principal book wherein merchants enter their accounts. See *Book-Keeping*.

LEE, in the ſea-language, that part of the hemiſphere to which the wind blows, in oppoſition to the weather or windward ſide. This expreſſion however is only uſed in a ſhip, when the wind croſſes the line of her courſe at a greater or leſs angle; and hence

Under the LEE, implies farther to leeward, or farther from that part of the horizon from which the wind blows; as,

Under the LEE *of the ſhore*, i. e. at a ſhort diſtance from that ſhore which lies to the windward, or from the land where the wind blows from. This phraſe is commonly uſed to expreſs the ſituation of a ſhip or boat which may be anchored, or ſailing under the weather ſhore, where there is always ſmoother water and leſs danger of heavy ſeas than at a great diſtance from it.

The Land appears under our LEE, i. e. at ſome diſtance from a ſhip on that ſide to which the wind bloweth, as it thwarts her way: and hence

To LEE-WARD, towards that part of the hemiſphere which lies under the lee, or to which the wind bloweth.

LEE-WAY is the angle that the rhumb-line, upon which the ſhip endeavours to ſail, makes with the rhumb upon which ſhe really ſails. This is occaſioned by the force of the wind, or ſurge of the ſea, when ſhe lies to the windward, or is cloſe hauled; which cauſes her to fall off and glide ſide-ways from the point of the compaſs ſhe capes at. Thus, let N E S W (plate XXVII. fig. 2.) repreſent the compaſs, and ſuppoſe a ſhip at C capes at, or endeavours to ſail upon the rhumb C *a*, but by the force of the wind and ſurge of the ſea ſhe is obliged to fall off, and make her way good upon the rhumb C *b*; then the angle *a* C *b* is the lee-way: and if that angle be equal to one point, the ſhip is ſaid to make one point lee-way; or if equal to two points, the ſhip is ſaid to make two points lee-way, &c.

The quantity of this angle is very uncertain; becauſe ſome ſhips, with the ſame quantity of ſail, and with the ſame gale, will make more lee-way than others; it depending much upon the mould and trim of the ſhip, and the quantity of water that ſhe draws. However, the common allowances made for lee-way, are theſe: 1. If the ſhip be cloſe hauled, has all her ſails ſet, the water ſmooth, and a moderate gale of wind, ſhe is ſuppoſed to make little or no lee-way. 2. If it blow ſo freſh, as to cauſe the ſmall ſails to be handed, it is uſual to allow one point. 3. If it blow ſo hard that the tops muſt be cloſe reeft, the ſhip then makes about two points lee-way. 4. If one topſail muſt be handed, it is common to allow two and three quarters or three points lee-way. 5. When both topſails muſt be handed, they allow about four points lee-way. 6. When it blows ſo hard as to occaſion the fore-courſe to be handed, the allowance is between five and half and ſix points. 7. When both main and fore-courſes muſt be handed, then ſix, or ſix and a half points muſt be allowed for her lee-way. 8. When the mizzen is handed, and the ſhip is trying a hull, ſhe then makes her way good about one point before the beam, that is, about ſeven points lee-way.

* LEE (NATHANIEL) an Engliſh dramatic poet, was the ſon of a clergyman, and educated under Dr. Buſby, at Weſtminſter-ſchool, from whence he was ſent in 1668 to Trinity-college, Cambridge; but not ſucceeding to a fellowſhip, he left the univerſity and went to court, where alſo meeting with diſappointment, he had recourſe to his pen, and wrote ſeveral plays with ſucceſs. He then tried his talents at acting, but without applauſe. He was not only negligent of œconomy, but ſo rakiſhly extravagant, as to be frequently plunged into the loweſt depth of miſery. At length becoming diſordered in his ſenſes, he was confined in the hoſpital of Bethlem, where he continued four years; after which he wrote his Princeſs of Cleves, and The Maſſacre of Paris, but was never perfectly recovered, and was reduced ſo low, that his chief dependence was a weekly ſtipend of ten ſhillings from the Theatre Royal. He died in 1690, in a drunken frolick by night in the ſtreet. He wrote eleven plays, in ſome of which he was aſſiſted by Mr. Dryden, and all of them were acted with applauſe.

LEECH, *Hirudo*, in zoology. See *Hirudo*.

* LEEDS, a large town in Yorkſhire, with two markets on Tueſdays and Saturdays, and two fairs on July 10, for horſes and hard-ware; and on November 8, for horned cattle, horſes, and hard-ware. It was made a corporation by charter, by king Charles I. under the government of one chief alderman, nine burgeſſes, and twenty aſſiſtants; and was again incorporated in the reign of Charles II. with the title of a mayor, twelve aldermen, and twenty-four aſſiſtants. It drives a great trade in the woollen manufacture, and the markets are large for cloth, and all ſorts of proviſions. It has three churches, and was once the ſeat of the kings of Northumberland. It ſtands on the river Air, over which there is a ſtone bridge. John Harriſon, Eſq; was a great benefactor to this town, in 1626, for he built a fine church, dedicated to St. John the Evangeliſt, endowed it with eighty pounds a year, and ten pounds a year to keep it in repair; alſo a houſe for the miniſter. He built an hoſpital for old perſons who had been induſtrious, and of good converſation, which he endowed with eighty pounds a year, to which he added a chapel with ten pounds a year, for the maſter to read prayers in. He alſo built a free-ſchool, and added a

library thereto. He erected a ſtately croſs for the conveniency of the market, and left the reſidue of his eſtate, being thirty pounds a year, in truſt for ſuch of his relations who ſhould fall to decay. Leeds ſends two members to parliament, and is twenty-five miles weſt-ſouth-weſt of York, and one hundred and ninety-ſix north of London.

LEEK, a garden plant, called by botaniſts porrum. See the article *Porrum*.

Leeks are commonly ſown along with onions; the onions growing up firſt are pulled up, ſo that the leeks have room to grow to their full ſize.

LEES, the more groſs and ponderous parts of liquors, which, being ſeparated by fermentation, fall to the bottom.

LEET, *Leta*, a ſmall court held within a manor, and called the king's court, becauſe its authority to puniſh offences originally belonged to the crown, from whence it derived to inferior perſons. See *Court-Leet*.

LEG, *Crus*, in anatomy, includes the whole of the lower extremities, from the os innominatum to the toes, being commonly divided into the thigh, leg, and foot. See *Thigh* and *Foot*.

The leg conſiſts of three bones, the tibia, fibula, and rotula. The tibia is a long, thick, triangular bone, ſituated at the anterior internal part of the leg, and continued nearly in a ſtraight line from the thigh bone, to ſupport the whole ſuperior fabric. The fibula is the ſmall long bone, on the outſide of the leg, oppoſite to the external angle of the tibia, being irregularly triangular. This bone ſerves chiefly for the origin and inſertion of muſcles, and for the more firm articulation of the foot. The rotula is the ſmall flat bone ſituated at the anterior part of the joint of the knee.

LEGACY, any thing that is particularly given or bequeathed by a laſt will and teſtament.

LEGATE, a cardinal or biſhop, whom the pope ſends as his ambaſſador to ſovereign princes. There are three kinds of legates, viz. legates a latere, legates de latere, and legates by office, or legati nati: of theſe the moſt conſiderable are the legates a latere, the next are the legates de latere. See the article *A Latere*.

Legates by office are thoſe who have not any particular legation given them, but who by virtue of their dignity and rank in the church become legates; ſuch are the archbiſhops of Rheims and Arles; but the authority of theſe legates is much inferior to that of the legates a latere.

LEGATUS, in Roman antiquity, a military officer who commanded as deputy of the chief general.

LEGEND, a ridiculous ſtory told by the Romaniſts concerning their ſaints, and other perſons, in order to ſupport the credit of their religion.

LEGER-LINE, in muſic, one added to the ſtaff of five lines, when the aſcending or deſcending notes run very high or low: there are ſometimes many of theſe lines both above and below the ſtaff, to the number of four or five.

LEGGIARDO, or LEGGIARDAMENTE, in muſic, ſignifies to play or ſing in a lively, briſk, and gay manner.

* LEGHORN, a ſea-port town of Italy, in the duchy of Tuſcany. It is well built, and the ſtreets are ſtrait; and though it was formerly only a wretched village, on account of the ſtanding waters which ſurrounded it, it is now become a conſiderable trading place, and is much frequented by foreign merchants, who come there on account of trade, and perhaps they may chooſe this place to reſide in, becauſe no one here can be arreſted for debt. It was fortified by Ferdinand Medicis, who rendered the harbour as ſafe from the inſults of enemies, as it is againſt the violence of the winds; for no ſhips can enter into it, except one at a time, and the entrance is defended by a ſtrong citadel. The ſame prince cauſed a canal to be cut from this city to Piſa, which not only drew off the ſtanding water, but is of great advantage to merchants, to convey their merchandize on. This harbour always ſwarms with ſhips, and there are here people of all nations, alſo a great number of gally-ſlaves, who are generally Turks. The city is defended by three conſiderable forts, and has two harbours, the one for gallies, and the other for merchantmen. There is a fine ſtatue of duke Ferdinand, who holds four ſlaves in chains, that lie at his feet. The great duke's palace is very fine and commodious, and the governor of the city reſides in it. The inhabitants are in ſuch want of good water, that they are obliged to ſend for it to Piſa. The foreign merchants pay no duty, it being a free port, but the inland duties are very high, it being the town from whence the great duke has his principal revenue, even the very ice-merchant pays a thouſand pounds a year, and the tobacco-merchants ten thouſand. In the hoſpital where the galley ſlaves lie,

there are three little moſques, where the Turks worſhip in their own way. The trade here conſiſts chiefly in ſilks, coffee, cotton, aniſeed, alum, fine wax, eſſences, ſtraw hats, wine, and oil. The Jews here are very numerous. The Greeks and the Armenians have churches here, in which divine ſervice is performed after their own manner, not to mention the fine ſynagogue and ſchools of the Jews. It is ſeated on the Mediterranean ſea, ten miles ſouth of Piſa, and one hundred and forty-ſix north-weſt of Rome. Long. 10. 25. E. Lat. 43. 33. N.

LEGION, in Roman antiquity, a body of foot which conſiſted of ten cohorts, and containing at different times from 3000 to 6000.

LEGISLATOR, or Law-giver, he who frames laws for any ſtate or kingdom.

LEGITIMATION, an act whereby illegitimate children are rendered legitimate.

LEGUME, *Legumen*, among botaniſts, denotes a pericarpium of an oblong compreſſed figure, formed of two valves, joined by a viſible ſuture both on the upper and under parts, and having the ſeeds affixed to the upper limbs of the two valves, in an alternate order.

LEGUMINOUS, an appellation given to all plants whoſe fruit is a legume.

* LEICESTERSHIRE, a county of England which lies almoſt in the centre, and is divided into two nearly equal parts by the river Soar. It is about ninety-ſix miles in circumference, and is bounded on the eaſt by Rutland and Lincolnſhire, on the north by Nottingham and Derbyſhire, on the weſt by Warwickſhire, from which it is parted by the Roman military way called Watling-ſtreet, and on the ſouth by Northamptonſhire. It contains ſix hundreds, twelve market-towns, and one hundred and ninety-two pariſhes. This county ſends but four members to parliament, two for the county, and two for Leiceſter. Its principal rivers are the Welland, the Soar, and the Avon. The air of this county is ſweet and healthy, and the ſoil generally good, and yields plenty of corn, beans, and graſs; but the north-eaſt part, which abounds with coal, is for the moſt part barren and rocky. They have no manufactures in this county, except ſtocking-weaving, ſo that the ſhepherd and the huſbandman are the chief employments. However a great deal of wool is ſent from hence to many parts of England.

* LEICESTER, the county town of Leiceſterſhire, is ſeated on the river Soar. It is an ancient borough, having had its firſt charter from king John, and is governed by a mayor, a recorder, twenty-four aldermen, forty-eight common-councilmen, a ſteward, a bailiff, a town-clerk, and a ſolicitor. The freemen of this town are exempted from toll, in all fairs and markets in England. It was the Roman Ratæcoritanorum; ſince that time it was ſo large a city, as to contain thirty-two pariſh churches, and in the year 680 it was the ſee of a biſhop; it had alſo walls, and a ſtrong caſtle; both which were demoliſhed by Henry II. in 1173, on account of a rebellion of the earl of Leiceſter, who fortified this place in defiance of the king. Near the caſtle, Henry earl of Lancaſter, in the reign of Edward III. founded a fine collegiate church, which was ruined at the time of the ſuppreſſion of the religious houſes: he alſo erected an hoſpital, which ſtill ſubſiſts, by means of certain ſtipends paid out of the duchy of Lancaſter. Here is alſo a well endowed hoſpital, founded by Sir William Wigſtone, a merchant of this town. There is but one principal ſtreet, which runs from north-weſt to ſouth-eaſt; the other parts of the town conſiſting chiefly of croſs ſtreets; there are five churches, and three markets, on Wedneſdays, Fridays, and Saturdays; and the fairs are on May 12, and July 5, for horſes, cows, and ſheep; on October 10, for horſes, cows, ſheep, and cheeſe; and on December 8, for horſes and cows. The only manufacture here is weaving of ſtockings, which have been lately greatly improved, and is become very large. Leiceſter is ſtill the largeſt and moſt populous town in the county. Here have been found many Roman antiquities and coins. It is thirty-two miles noth-weſt-by-north of Northampton, twenty-four ſouth-eaſt-by-ſouth of Derby, and ninety-nine north-weſt-by-north of London. Long. 1. 7. W. Lat. 52. 37. N.

* LEIPSICK, a city in the circle of Upper Saxony, in Germany. It is one of the moſt populous and handſome cities in Germany, it being ſituated in a pleaſant fruitful plain, at the confluence of three ſmall rivers, namely, the Elſter, the Pleiſſa, and the Barda. The houſes are built with ſtone or brick, ſix or ſeven ſtories high, and each floor is a tenement, from the cellar to the garret. The cellars are generally let to Italians, who

deal in wines, fruit, and merchandize from Italy. The ſtreets are large, neat, and clean; likewiſe the ſuburbs are very pleaſant. There are a great number of pleaſure-gardens round the town, where the chief merchants have houſes to entertain and regale their friends, in a very ſplendid manner; theſe gardens are open to all ſtrangers, who have liberty to ſpend their evenings there, giving a ſmall gratification to the gardener. They have an old caſtle, which is of no great ſtrength, any more than the town itſelf, which in the laſt war ſurrendered to the king of Pruſſia, without making any defence. The churches are but poor, except that of St. Nicholas, which is thought to be the fineſt Lutheran church in Germany. The great market-place is adorned with merchants houſes, which look like palaces; the reſt of the buildings worth notice are the exchange, the ſtadt-houſe, and the town-library. There is a famous univerſity in this city, very much frequented by foreigners: the univerſity library, the college of St. Paul, and the anatomical theatre are well worth obſervation. The German language is ſpoken here in great perfection, and they have erected an academy to aſcertain the purity of the language. They have three great fairs here every year, the firſt of which begins on New-year's day; the Eaſter fair begins the third Monday after Eaſter; and Michaelmas fair begins on the firſt Sunday after St. Michael's day; theſe fairs all continue for fifteen days, but the greateſt ſales are the week before the fair, and the ſecond week is employed in payments. By means of theſe fairs, Leipſick is a repoſitory of merchandize of every kind. The manufactures here are ſtuffs, gold and ſilver lace, and ſeveral other articles too tedious to mention. They have likewiſe wool enough to export into diſtant parts, even as far as Swiſſerland. The inhabitants of Leipſick are generally rich, and live in a ſplendid manner. The women dreſs vaſtly gay, with a profuſion of gold and ſilver lace. There are a great number of chariots in the town, which belong to phyſicians, univerſity profeſſors, and merchants, for the nobility are not allowed to have houſes here. It is thirty-eight miles ſouth of Wittemberg, and two hundred and fifty north-weſt from Vienna. Long. 12. 55. E. Lat. 51. 19. N.

* LELY (Sir PETER) a very eminent painter of the Engliſh ſchool, was born at Soeſt, in Weſtphalia, in 1617, where his father, a captain of foot, was in garriſon. His name was Vander Vaas; but being born at the Hague, at a perfumer's who kept the ſign of the Lily, he received the appellation of captain Du Lys, or Lely, which became the proper name of his ſon. He received his firſt inſtructions in painting from one De Grebber. The great encouragement given by king Charles I. to painting, drew him to England in 1641, where he at firſt painted landſcapes with ſmall figures, and alſo hiſtorical compoſitions; but finding face-painting more encouraged, he applied to it, and ſoon excelled all his cotemporaries; which procuring him great buſineſs, prevented his going to Italy, as he had intended, on which he procured the beſt drawings, prints, and paintings of the moſt celebrated Italians, and having at length the beſt collection of any one of his time, acquired an admirable ſtyle by his daily ſtudying the works of thoſe great maſters. Thus in the correctneſs of his draughts, and in beauty of colouring, the graceful airs of his heads, the pleaſing variety of his poſtures, and in the gentle and looſe management of his draperies, he excelled moſt of his predeceſſors, and will be a pattern to all ſucceeding artiſts. But the critics remark, that moſt of his faces have a languiſhing air, long eyes, and a drowſy ſweetneſs peculiar to himſelf. He was a good hiſtory-painter, and his crayon draughts are alſo admirable. He was much favoured by king Charles II. who made him his principal painter, and conferred on him the honour of knighthood: he was alſo eſteemed by perſons of the greateſt eminence in the kingdom. He died at London of an apoplexy, as he was drawing the ducheſs of Somerſet, in the year 1680, and was buried in Covent-Garden church, where he has a marble monument.

LEMMA, in mathematics, a previous propoſition laid down, in order to clear the way for ſome following demonſtration: and is prefixed either to the theorems or problems.

LEMNA, duck-weed, in botany.

LEMON, *Limon*, in botany, a genus of trees with large ſtiff leaves like the citron, without any appendage at the bottom; the flower conſiſts of many leaves, which expand in form of a roſe: the fruit is almoſt of an oval figure, and divided into ſeveral cells, in which are lodged hard ſeeds ſurrounded by a thick fleſhy ſubſtance, which, in general, is full of an acid juice. All ſorts are propagated by budding or inarching them either on ſtocks of lemons or citrons produced from ſeeds, but they will not readily unite on orange ſtocks; for which reaſon the citrons are preferable to either oranges or lemons for ſtocks, as they readily join with either ſort; and being of larger growth, cauſe the buds of the other ſorts to be much ſtronger than if they were on ſtocks of their own kind. The culture of the lemon is the ſame with that of the orange-tree, with this difference only, the former being hardier than the latter, will conſequently bring their fruit to maturity with us much better than the orange will, and therefore require to have a greater ſhare of freſh air in winter; for which reaſon they ſhould always be placed nearer to the doors or windows of the green-houſe; and in ſome curious gardens theſe trees have been planted againſt walls, where, by covering them with glaſſes in winter, and protecting them from ſevere froſt, they have produced plenty of large fruit: as theſe trees generally produce ſtronger ſhoots, ſo they require more water to be given them than the orange; but as to the tender ſorts, they muſt be treated with a little more care, otherwiſe their fruit will fall off in winter, and come to nothing. See *Orange*.

LEMONADE, a liquor prepared of water, ſugar, and lemon or citron-juice: it is very cooling and grateful.

LEMURIA, a feſtival of the ancient Romans, ſolemnized on the ninth of May, to pacify the manes of the dead, who were the lemures or phantoms that came in the night to torment the living.

LENITIVE MEDICINES, among phyſicians, thoſe of a mild, ſoftening, and relaxing nature, and deſtitute of all acrimony.

LENS, in dioptrics, a ſmall oblong glaſs like a lentil; it is a medium terminated on one ſide by a ſpherical ſurface, on the other by a ſurface either plain or ſpherical. The axis of a lens is a line paſſing perpendicularly through both its ſurfaces: thus the line F G is an axis common to all the five. Lenſes are diſtinguiſhed into two general kinds, convex and concave; the firſt and ſecond lenſes are conſidered as convex; the third and fourth as concave; the laſt, if its convexity is greater than its concavity, is looked upon as convex; if on the contrary, it is conſidered as concave. A lens is always ſuppoſed to conſiſt of a medium denſer than the circumambient one, unleſs where the contrary is expreſſed. When parallel rays fall upon the ſurface of a convex lens, they are refracted towards each other in paſſing through it, and thereby collected to a focus on the other ſide. If the lens is plain on one ſide and convex on the other, the rays are refracted the ſame way, but in a leſs degree. When parallel rays fall upon a concave lens, they are refracted from each other in paſſing through it, and thereby made to diverge, proceeding as from an imaginary focus on the firſt ſide of the lens. If the rays diverge before they enter the lens, their imaginary focus is then nearer the lens than that of the parallel rays. If they converge before they enter the lens, proceeding towards ſome diſtant point in the axis, they are then rendered leſs converging; if they converge to a point at the ſame diſtance from the lens with the focus of parallel rays, they then go out parallel; if to a point at leſs diſtance, they remain converging, but in a leſs degree than before they entered the lens. When the rays enter the lens diverging the nearer their radiant point is to it, the nearer alſo is their imaginary focus after refraction, and vice verſa. If the lens is plain on one ſide and concave on the other, the rays ſuffer a like refraction in each caſe, but in a leſs degree. But the method of determining the exact focal diſtance of lenſes is to be had from the propoſitions laid down and demonſtrated in the article *Refraction*. When a ray paſſes through a medium terminated by two plane and parallel ſurfaces, it is refracted one way in going out of the ſecond, as much as it was the other in entering the firſt; and, therefore, proceeds afterwards, not in the ſame direction, but in one which is parallel to that which it had before.

LENT, a ſolemn time of faſting in the Chriſtian church, obſerved as a time of humiliation before Eaſter, the great feſtival of our Saviour's reſurrection. Thoſe of the Romiſh church, and ſome of the proteſtant communion, maintain, that it was always a faſt of forty days, and as ſuch, of apoſtolical inſtitution. Others think it was only of eccleſiaſtical inſtitution, and that it was variouſly obſerved in different churches, and grew by degrees from a faſt of forty hours, to a faſt of forty days. This is the ſentiment of Morton, biſhop Taylor, Du Moulin, Daillé, and others.

LENTISCUS, the lentiſk or maſtich-tree, in botany, a genus of trees, very nearly allied to the terebinthus, or turpentine-tree, in its characters, but differing in that the leaves are pennated; but there is no ſingle leaf to terminate the end of each compound one. See *Maſtich.*

LEO, in aſtronomy, one of the twelve ſigns of the zodiac, the fifth in order, containing, according to Ptolemy, thirty-two ſtars; according to Tycho, thirty-ſeven; and, in the Britannic catalogue, there are no leſs than ninety-four. The ſtar called the lion's heart, cor leonis, regulus, and baſilicus, is a fixed ſtar of the firſt magnitude.

LEONTODON, dandelion, in botany. It is ſaid to have much the ſame virtues with endive. See *Endive.*

LEONURUS, lion's tail, in botany, a genus of plants.

LEOPARD, a beaſt of prey, with the ſpots on the upper part of the body round, and the lower ones virgated. It is a very nimble, as well as fierce animal, ſo that ſcarce any thing eſcapes it. Authors called the male pardus, and the female panthera.

LEOPARD's BANE, doronicum, in botany.

LEPIDIUM, dittander, in botany.

LEPIDOPTERA, in zoology, an order of inſects, with four wings, which are covered with imbricated ſquamulæ: add to this, that the mouth is commonly ſpiral. Under this order are comprehended the butterflies, and phalenæ, or moths.

LEPROSY, *Lepro*, in phyſic, a higher degree of cutaneous diſorder than an itch, the ſame with lepra arabum. There is a wide difference between the itch and leproſy, and that ulcerous diſorder in which white ſordid ulcers, ſeizing principally the muſcular parts, ſuch as the back, arms, thighs, &c. diſcharge a putrid ſanies, and ſometimes appearing in one limb, and ſometimes in another, often continue for many years. Large quantities of worms are alſo found lodged within theſe ulcers, ſo that they can hardly be extirpated. The lepra and elephantiaſis are diſeaſes nearly alike. The method for the cure of theſe and ſuch like malignant diſorders is to diſcharge the maſs of corrupt, glutinous, and acrid humours, by ſufficient bleeding and abſtinence, by purges both gentle and draſtic, and then by a proper regimen. But if the growing and refractory ſtate of the diſeaſe raiſes a ſuſpicion of malignity, there are no remedies more powerful, if the patient's ſtrength permit, than mercury and its preparations. Some make an unguent of live mercury thoroughly extinguiſhed with pomatum, adding flowers of ſulphur and camphire, with which the joints, ancles, &c. are to be well rubbed. But others chooſe a better and ſafer method of uſing mercury internally; whilſt, by a previous preparation of the body, by alteratives, correctors, and evacuants, mercurius dulcis, with double the quantity of crabs-eyes, and diaphoretic antimony, is duly exhibited. This intention is alſo anſwered by mercurius ſolaris and jovialis, of which a few grains, with conſerve of roſes, may be exhibited every morning, drinking in bed, after it, a pint of ſome proper decoction. Each of theſe methods requires a very temperate air, a ſpare diet, and abſtinence from pinguious or boiled fleſh and acids. But if the patient be either an infant, or too old, both the antients and moſt judicious of the moderns have greatly extolled preparations of milk, eſpecially aſſes milk, the whey of cows and goats milk, and milk mixed with water. Whenever theſe exanthematous diſorders are ſupported by a ſcorbutic lues, or hypochondriac affection, a much greater advantage will be procured, when the milk diet is ſo managed as to alleviate the other diſorder with which they are complicated: for which purpoſe the beſt way is the due uſe of medicinal waters, eſpecially thoſe of a temperate kind, impregnated with a ſaline and ſpirituous principle. But if ſuch waters cannot be had, the end will be beſt anſwered by a decoction of ſuch herbs as depurate the blood, and are particularly deſtined to theſe diſorders, with milk or whey, both ſweet and ſomewhat ſour. *Francis Hoffman.*

LEPUS, in aſtronomy, a conſtellation of the ſouthern hemiſphere; comprehending twelve ſtars, according to Ptolemy; thirteen, according to Tycho; and nineteen in the Britannic catalogue.

LESSONS, among the eccleſiaſtical writers, portions of the Holy Scripture, read in Chriſtian churches at the time of divine ſervice.

LETHARGY, *Lethargus*, in phyſic, a kind of diſorder wherein the perſon affected labours under a heavy and perpetual ſleep, with ſcarce any interval of waking. There are ſeveral ſpecies of this diſorder; the chief are coma vigil, coma ſomnolentum, carus, and a lethargy.

LETHE, in the ancient mythology,

one of the rivers of hell, ſignifying oblivion or forgetfulneſs; its waters having, according to poetical fiction, the peculiar quality of making thoſe who drank of them entirely forget every thing that was paſt.

LETTER, *Litera*, a character either in print or writing, which men have agreed on to ſignify ſomething, by joining of which they make their thoughts known to one another. The alphabet of every language conſiſts of a certain number of letters or characters, which have a different ſound, form, and ſignification, See *Alphabet*. Some ſay that Fohi, firſt king among the Chineſe, and 2950 years before Chriſt, invented letters, having writ in their language a book called Yexim. Others think from mummies and obeliſks, that hieroglyphics were the firſt manner of writing, they being prior to Moſes, as moſt of the obeliſks and pyramids were made, while the Iſraelites were in Egypt. The Chaldeans or Phœnicians, it is very likely, were the maſters of the Egyptians; whence it was that thoſe letters were called Phœnician by the Greeks: yet, according to Diodorus Siculus, they only changed the form of letters.

Pliny will have the moſt ancient letters to have been the Aſſyrian; and that Cadmus, about two hundred and fifty years before the Trojan war, brought ſixteen of them from Phœnicia into Greece, namely, A, B, C, D, E, F, I, L, M, N, O, P, R, S, T, U. Simonides, Evander, and Demaratus were the firſt that brought letters into Italy.

The letters F, G, H, K, Q, X, Y, Z, were formerly unknown to the Romans. One letter was intended to ſignify only one ſound, and not as at preſent now to expreſs one ſound, and then another, which has introduced that confuſion which has rendered the learning of our modern tongues extremely difficult.

Grammarians diſtinguiſh their letters into vowels and conſonants; into mutes, diphthongs, liquids, and characteriſtics. Printers diſtinguiſh their letters into capital, majuſcule, initial, or upper-caſe letters, which ſerve for the titles of books, &c. and minuſcule, ſmall or under-caſe letters, which are again divided into pearl, nonpareil, pica, &c.

Letters, again, are of various ſizes, each of which are ſometimes caſt with the Roman, ſometimes Italic, ſometimes an Engliſh, or black letter face. There are alſo bodies with the Greek, Hebrew, Arabic, the muſic face, &c. A ſet or fount of any of theſe ſizes includes current letters, capitals, numeral figures, points, ſpaces, &c. See *Fount*.

Letters are the elements of grammar; an aſſemblage of theſe compoſes ſyllables, of thoſe words, and of theſe ſentences.

Numeral LETTERS, thoſe uſed inſtead of cyphers, in order to expreſs numbers, as C, D, I, L, M, V, X.

LETTER alſo denotes the ſame with epiſtle, a writing addreſſed to any perſon.

LETTER *of Attorney*, a writing authoriſing any perſon to do ſome lawful act for another, as to give ſeizin of lands, receive debts, ſue a third perſon, &c.

LETTER *of Credit*, among merchants, a letter wrote by a merchant or banker to his correſpondent abroad, requeſting him to credit the bearer as far as a certain ſum. See *Credit*.

LETTER *of Licence*, an inſtrument or writing granted by a perſon's creditors, allowing him a certain time for the payment of his debts; by which means he is enabled to proſecute his buſineſs, without fearing an arreſt.

LETTER *of Mart*, or *Marque*, a letter granted to one of the king's ſubjects, under the privy-ſeal, impowering him to make repriſals for what was formerly taken from him by the ſubjects of another ſtate, contrary to the law of mart. See *Marque*.

LETTERS-PATENT, or OVERT, writings ſealed with the great ſeal of England, ſo called, becauſe they are open with the ſeal affixed to them. Theſe are granted to authoriſe a man to do, or enjoy, what of himſelf he could not do.

LETTUCE, *Lactuca* in botany, a genus of plants. It would be beſide my purpoſe to mention in this place the ſeveral ſorts of lettuce that are to be found in botanic writers, many of which are plants of no uſe, and are never cultivated but in botanic gardens for variety; and ſome of them are found wild in many parts of England. I ſhall therefore paſs over thoſe here, and only mention the ſeveral ſorts which are cultivated in the kitchen garden for uſe: 1. Common or garden lettuce. 2. Cabbage lettuce. 3. Cilicia lettuce. 4. Dutch brown lettuce. 5. Aleppo lettuce. 6. Imperial lettuce. 7 Green capuchin lettuce. 8. Verſailles or upright white cos lettuce. 9. Black cos. 10 White cos. 11. Red capuchin lettuce. 12. Roman lettuce 13. Prince lettuce. 14. Royal lettuce. 15. Egyptian than cos lettuce. The firſt of theſe ſorts is commonly ſown very early for cutting, to mix with other ſmall ſallad herbs, and is only different from the ſecond ſort, in being a degeneracy therefrom; or otherwiſe the ſecond is an improvement by frequent cultivation from the firſt: for if the ſeeds are ſaved from ſuch plants of the ſecond ſort as did not cabbage cloſely, the plants produced from that ſeed will all degenerate to the firſt ſort; which is by the gardeners called lapped lettuce, to diſtinguiſh it from the other, which they call cabbage lettuce. The cabbage lettuce may alſo be ſown at different times of the year, in order to have a continuation of it through the whole ſeaſon.

The Cilicia, imperial, royal, black, white, and upright cos lettuces may be ſown at the following times: the firſt ſeaſon for ſowing theſe ſeeds is at the end of February, or the beginning of March, upon a warm light ſoil, and an open ſituation; i. e. not overſhadowed with trees. You may alſo continue theſe ſorts through the ſeaſon, by ſowing them in April, May, and June; obſerving to ſow the late crops in a moiſt ſhady ſituation, otherwiſe they will run up to ſeed before they grow to any ſize; but in Auguſt, toward the latter end, you may ſow of theſe ſorts, to abide the winter. The moſt valuable of all the ſorts of lettuce in England are the Egyptian green cos, and the Verſailles or white cos, the Cilicia, and black cos; though ſome people are very fond of the royal and imperial lettuces; but they ſeldom ſell ſo well in London markets as the others, nor are ſo generally eſteemed. Indeed of late years, ſince the white cos has been commonly cultivated, it has obtained the preference of all the other ſorts, until the Egyptian green cos was introduced; which is ſo much ſweeter and tenderer than the white cos, that it is by all good judges eſteemed the beſt ſort of lettuce known. This ſort will endure the cold of our ordinary winters full as well as the white cos; but at the ſeaſon of its cabbaging, if there happens to be much wet, this ſort being very tender, is very ſubject to rot. The brown Dutch and green capuchin lettuces are very hardy, and may be ſown at the ſeaſons as was directed for the common cabbage lettuce; and are very proper to plant under a wall or hedge to ſtand the winter; where many times theſe will abide, when moſt of the other ſorts are deſtroyed: and therefore they will prove very acceptable at a time when few other ſorts are to be had. The red capuchin, Roman, and prince lettuces are pretty varieties, and cabbage very early; for which reaſon a few of them may be preſerved; as may ſome of the Aleppo, for the beauty of its ſpotted leaves; though very few people care for either of theſe ſorts at table, when the other more valuable ones are to be obtained. *Miller's Gardener's Dict.*

LEVARI FACIAS, a writ directed to the ſheriff for levying a certain ſum of money upon the lands, &c. of a perſon who has forfeited his recognizance.

LEVATOR *ſcapulæ proprius*, in anatomy, or rather according to Winſlow, *angularis*, a long and pretty thick muſcle, about two fingers in breadth, lying above the ſuperior angle of the ſcapula, along the poſterior lateral part of the neck of that bone.

LEVATORES *Ani*, in anatomy, are muſcles that ariſe fleſhly from each ſide of the oſſa pubis, internally within the pelvis, as alſo from part of the os iſchium and ſacrum; from thoſe places, like lines drawn from a circumference towards a center, its fibres deſcend, over the muſculi marſupiales, to their implantation at the lower end of the inteſtinum rectum in the anus. They chiefly ſerve to ſuſpend and draw the anus upwards, leſt the fæces ſhould be burthenſome to the ſphincter.

LEUCADENDRON, in botany, a genus of plants.

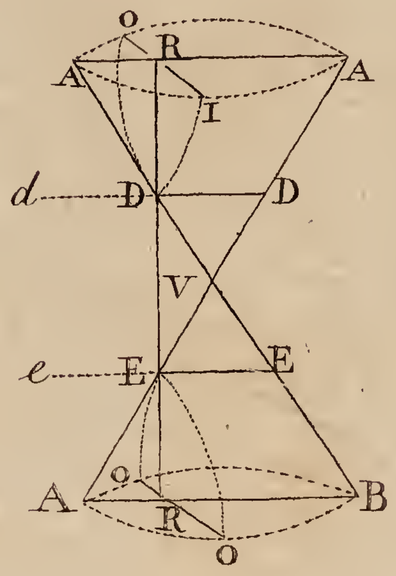
LEVEL, an inſtrument to draw a line parallel to the horizon, whereby the difference of aſcent or deſcent between ſeveral places may be found, for conveying water, draining fens, &c. The word is derived from the Latin, *libella*, the croſs beam in a balance, which, to be juſt, muſt ſtand exactly horizontal.

Air LEVEL, that which ſhews the line of level by means of a bubble of air incloſed with ſome liquor in a glaſs tube, whoſe two edges are ſealed hermetically. When the bubble fixes at a mark made exactly in the middle of the tube, the plane where it is fixed is level; otherwiſe the bubble will riſe to one end.

The liquor with which the tube is filled is oil of tartar, or aqua-ſecunda; theſe not being liable to freeze.

Air LEVEL, with ſights, conſiſts of an air level (plate XXVII. fig. 3.) about eight inches long, and ſeven or eight in diameter, ſet in a braſs tube, with an aperture in the middle. The tubes are carried in a ſtrong ſtraight ruler, a foot long,

Fig. 1. Latus Transversum.



Lee Way.

Fig. 2.

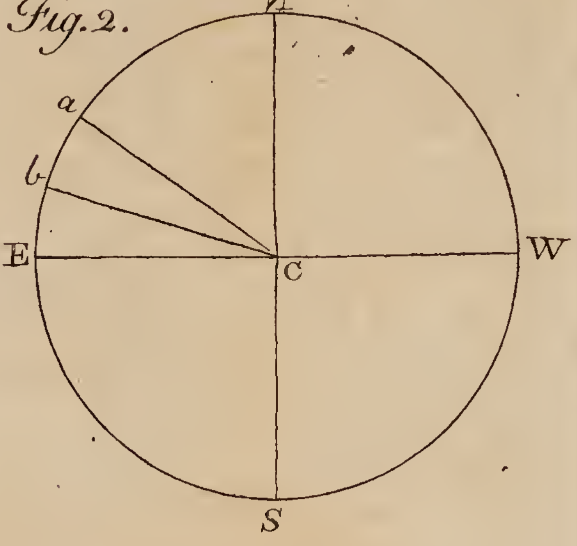
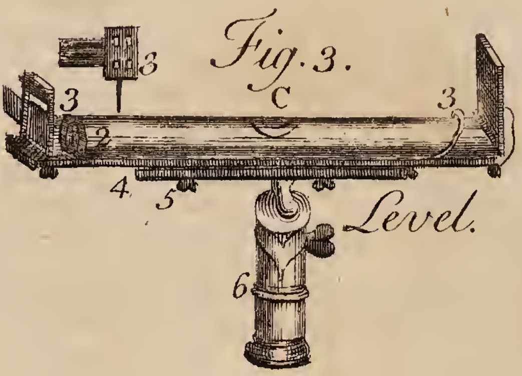
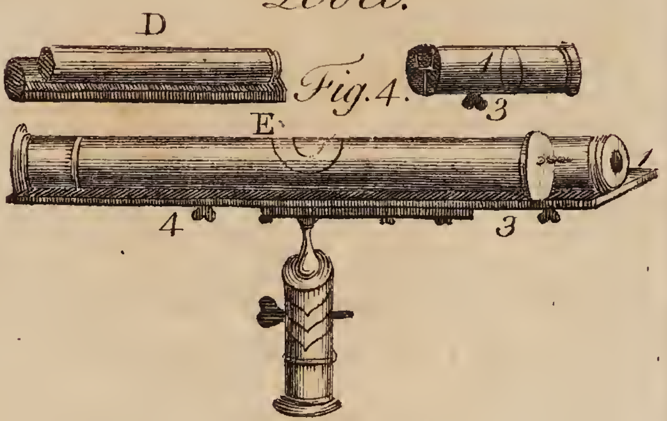


Fig. 3. *Level.*



Level. *Fig. 4.*



Level. *Fig. 7.*

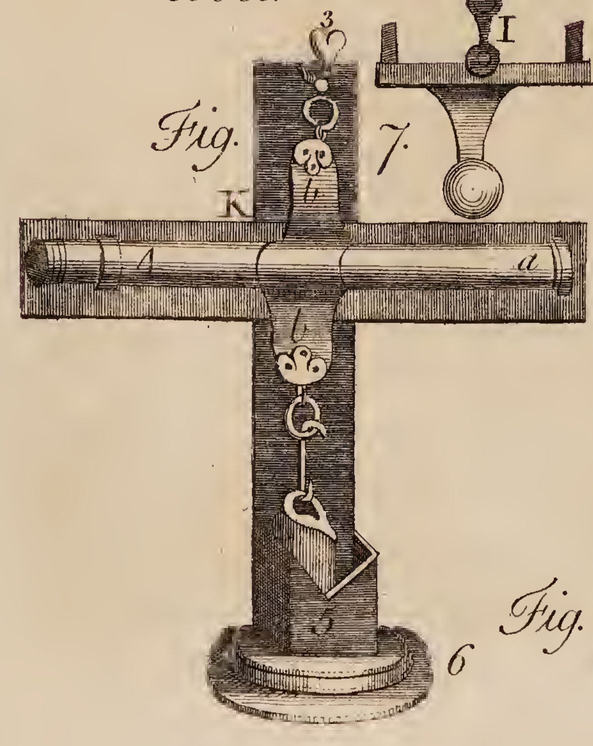


Fig. 6. *Level.*

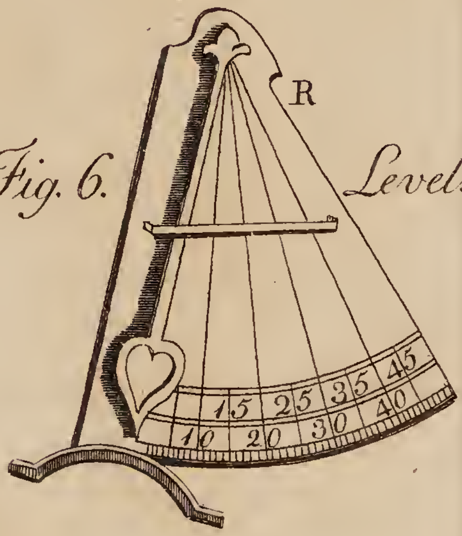
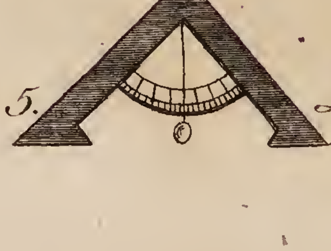


Fig. 5. *Level.*



long, at whoſe ends are fixed two ſights exactly perpendicular to the tubes, and of an equal height, having a ſquare hole, formed by two fillets of braſs croſſing each other at right angles, in the middle of which is drilled a very little hole, through which a point on a level with the inſtrument is deſcribed. The braſs tube is faſtened on the ruler by means of two ſcrews; one of which, marked 4, ſerves to raiſe or depreſs the tube at pleaſure, to bring it to a level. The top of the ball and ſocket is rivetted to a little ruler, that ſprings, one end of which is faſtened with ſcrews to the great ruler, and the other end has a ſcrew 5, ſerving to raiſe or depreſs the inſtrument when nearly level.

The following is a more commodious inſtrument.

Air LEVEL with teleſcope ſights: this level (plate XXVII. fig. 4.) only differs from the laſt, in that, inſtead of plain ſights, it carries a teleſcope.

This was invented by M. Huygens; which has this advantage, that it may be inverted by turning the rule and teleſcope half round; and then, if the hair cut the ſame point that it did before the turn, it is a proof that the operation is juſt.

It may be obſerved, that one may add a teleſcope to any kind of level, by applying it upon a parallel to the baſe or ruler, when there is occaſion to take the level of remote objects.

Dr. Deſaguliers contrived an inſtrument, by which the difference of level of two places, which could not be taken in leſs than four or five days with the beſt teleſcope levels, may be taken in as few hours. The inſtrument is as follows: to the ball C (fig. 3.) is joined a recurve tube B A, with a very fine bore, and a ſmall bubble at top A, whoſe upper part is open. It is evident from the make of this inſtrument, that if it be inclined in carrying, no prejudice will be done to the liquor, which will always be right both in the ball and tube, when the inſtrument is ſet upright. If the air at C be ſo expanded with heat as to drive the liquor to the top of the tube, the cavity A will receive the liquor, which will come down again, and ſettle at D, or near it, according to the level of the place where the inſtrument is, as ſoon as the air at C returns to the ſame temperament as to heat and cold. To preſerve the ſame degree of heat, when the different obſervations are made, the machine is fixed in a tin veſſel F E, filled with water up to *g h*, above the ball, and a very ſenſible thermometer has alſo its ball under water, that one may obſerve the liquor at D, in each experiment, when the thermometer ſtands at the ſame height as before. The water is poured out when the inſtrument is carried, which one may do conveniently by means of the wooden frame, which is ſet upright by three ſcrews S S S (fig 4.) and a line and plummet P P. The back part of the wooden frame is repreſented by fig 2. where from a piece at top K, hangs the plummet P, over a braſs point at N; M *m* are brackets, to make the upright board K N continue at right angles with the horizontal one at N: Fig. 1. repreſents a front view of the machine, ſuppoſing the fore part of the tin veſſel tranſparent; and here the braſs ſocket of the recurve tube, into which the ball is ſcrewed, has two wings at I I, fixed to the bottom, that the ball may not break the tube by its endeavour to emerge, when the water is poured in as high as *g h*.

After the doctor had contrived this machine, he conſidered, that as the tube is of a very ſmall bore, if the liquor ſhould riſe into the ball at A, in carrying the inſtrument from one place to another, ſome of it would adhere to the ſides of the ball A, and upon its deſcent in making the experiment ſo much might be left behind, that the liquor would not be high enough at D (fig. 3.) to ſhew the difference of the level; therefore, to prevent that inconveniency, he contrived a blank ſcrew, to ſhut up the hole at A, as ſoon as one experiment is made, that in carrying the machine, the air in A may balance that in C, ſo that the liquor ſhall not run up and down the tube, whatever degree of heat and cold may act upon the inſtrument, in going from one place to another. Now becauſe one experiment may be made in the morning, the water may be ſo cold, that when a ſecond experiment is made at noon, the water cannot be brought to the ſame degree of cold it had in the morning, therefore, in making the firſt experiment warm water muſt be mixed with the cold, and when the water has ſtood ſome time before it comes to be as cold as it is likely to be at the warmeſt part of that day, obſerve and ſet down the degree of the thermometer at which the ſpirit ſtands, and likewiſe the degree of the water in the barometer at D; then ſcrew on the cap at A, pour out the water, and carry the inſtrument to the place whoſe level you would know; then pour in your water, and when the thermometer is come to the ſame degree as before, open the ſcrew at top, and obſerve the liquor in the barometer.

The doctor's ſcale for the barometer is ten inches long, and divided into tenths; ſo that ſuch an inſtrument will ſerve for any heights not exceeding ten feet, each tenth of an inch anſwering to a foot in height.

The doctor made no allowance for the decreaſe of denſity in the air; becauſe he did not propoſe this machine for meaſuring mountains (though with a proper allowance for the decreaſing denſity of the air, it will do very well) but for heights that want to be known in gardens, plantations, and the conveyance of water, where an experiment that anſwers two or three feet in a diſtance of twenty miles, will render this a very uſeful inſtrument.

Foot LEVEL. See the article *Foot Level.*

Artillery Foot LEVEL, in gunnery, is in form of a ſquare, having its two legs or branches of an equal length, at a juncture whereof is a little hole, whence hangs a thread and plummet, playing on a perpendicular line in the middle of a quadrant. It is divided into twice forty-five degrees from the middle. Plate XXVII. fig. 5.

This inſtrument may be uſed on other occaſions, by placing the ends of its two branches on a plane; for when the thread plays perpendicularly over the middle diviſion of the quadrant, that plane is aſſuredly level. To uſe it in gunnery, place the two ends on the piece of artillery, which you may raiſe to any propoſed height, by means of the plummet, whoſe thread will give the degree above the level.

Carpenter's and Pavior's LEVEL conſiſts of a long ruler, in the middle whereof is fitted, at right angles, another ſomewhat bigger, at the top of which is faſtened a line, which, when it hangs over a fiducial line at right angles with the baſe, ſhews that the ſaid baſe is horizontal. Sometimes this level is all of one board.

Gunner's LEVEL, for levelling cannons and mortars, conſiſts of a triangle braſs plate, about four inches high, (fig. 6.) at the bottom of which is a portion of a circle, divided into 45 degrees, which number is ſufficient for the higheſt elevation of cannons and mortars, and for giving ſhot the greateſt range: on the center of this ſegment of a circle is ſcrewed a piece of braſs, by means of which it may be fixed or ſcrewed at pleaſure; the end of this piece of braſs is made ſo as to ſerve for a plummet and index, in order to ſhew the different degrees of elevation of pieces of artillery. This inſtrument has alſo a braſs foot, to ſet upon cannons or mortars, ſo as when thoſe pieces are horizontal, the inſtrument will be perpendicular. The foot of this inſtrument is to be placed on the piece to be elevated, in ſuch a manner as that the point of the plummet may fall on the proper degree: this is what they call levelling the piece.

Maſon's LEVEL, is compoſed of three rules, ſo joined as to form an iſoſceles-rectangle, ſomewhat like a Roman A, at the vertex whereof is faſtened a thread, from which hangs a plummet, that paſſes over a fiducial line, marked in the middle of the baſe, when the thing to which the level is applied is horizontal; but declines from the mark when the thing is lower on one ſide than on the other.

Plumb or *Pendulum* LEVEL, that which ſhews the horizontal lines by means of another line perpendicular to that deſcribed by a plummet or pendulum.

Reflecting LEVEL, that made by means of a pretty long ſurface of water, repreſenting the ſame object inverted, which we ſee erected by the eye, ſo that the point where theſe two objects appear to meet, is a level with the place where the ſurface of the water is found. This is the invention of M. Mariotte.

There is another reflecting level, conſiſting of a mirror of ſteel, or the like, well poliſhed, and placed a little before the object-glaſs of a teleſcope, ſuſpended perpendicularly. This mirror muſt make an angle of 45° with the teleſcope, in which caſe the perpendicular line of the ſaid teleſcope is converted into a horizontal line, which is the ſame with the line of level. This is the invention of M. Caſſini.

Water LEVEL, that which ſhews the horizontal line by means of a ſurface of water or other liquor, founded on this principle, that water always places itſelf level. See the article *Fluid.*

The moſt ſimple is made of a long wooden trough, or canal, whoſe ſides are parallel to the baſe, ſo that being equally filled with water, its ſurface ſhews the line of level.

Plate XXVIII. Facing Level.

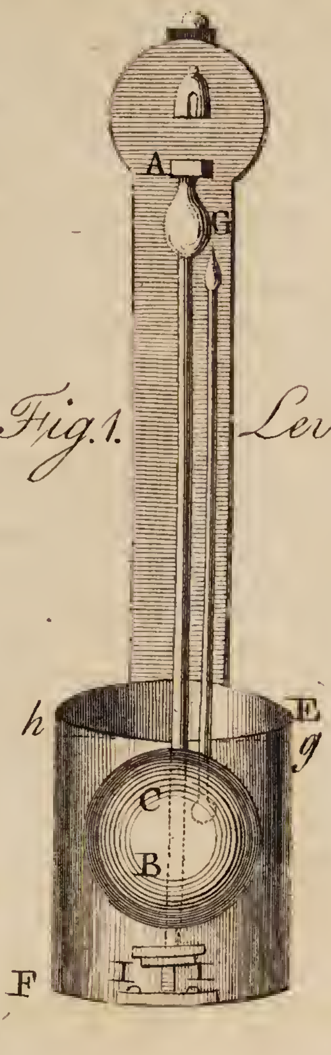


Fig. 1. Level.

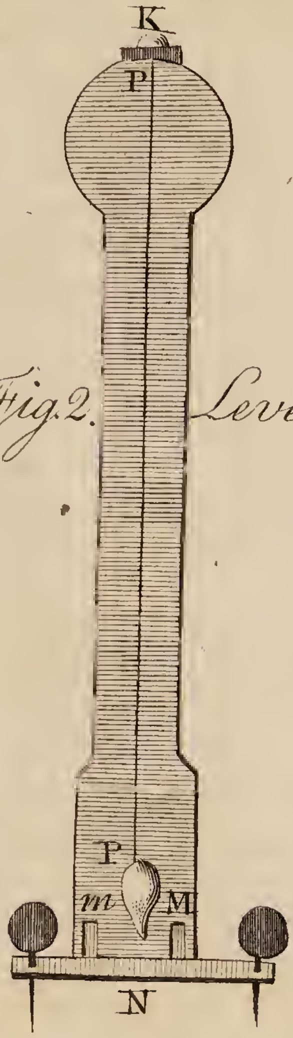


Fig. 2. Level.

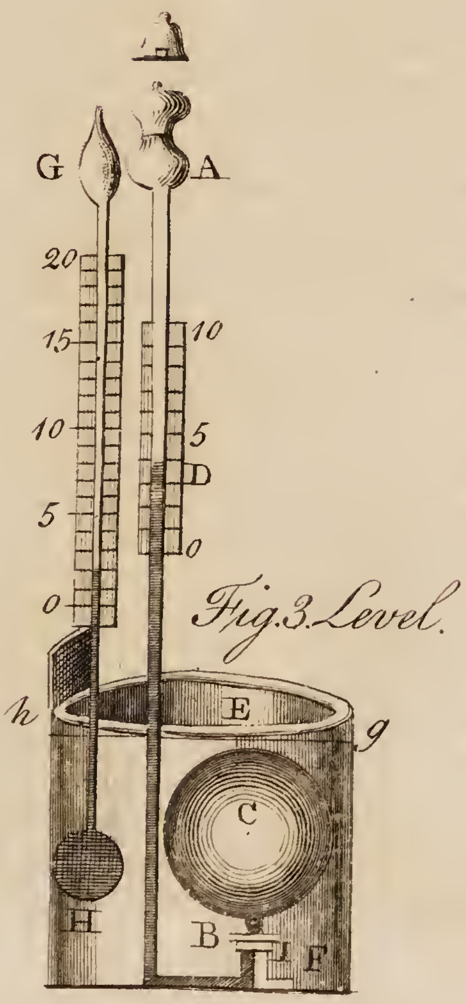


Fig. 3. Level.

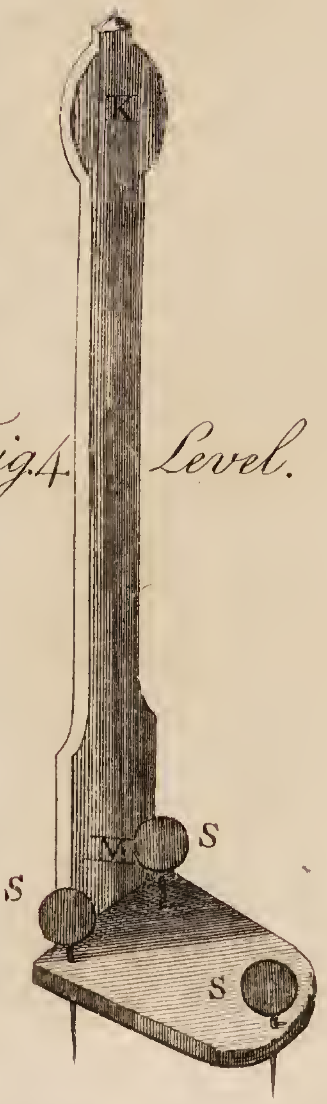


Fig. 4. Level.

It is alſo made with two cups fitted to the two ends of a pipe, three or four feet long, about an inch in diameter, by means whereof the water communicates from the one to the other cup; and this pipe being moveable on its ſtand by means of a ball and ſocket, when the two cups become equally full of water, their two ſurfaces mark the line of level.

This inſtrument, inſtead of cups, may alſo be made with two ſhort cylinders of glaſs three or four inches long, faſtened to each extreme of the pipe with wax or maſtic. Into the pipe is poured ſome common or coloured water, which ſhews itſelf through the cylinders, by means whereof the line of level is determined; the height of the water, with reſpect to the center of the earth, being always the ſame in both cylinders. This level, tho' very ſimple, is yet very commodious for levelling ſmall diſtances.

LEVEL *of Mr. Huygens's invention*, conſiſts of a teleſcope *a*, (fig. 7.) in form of a cylinder going through a ferril, in which it is faſtened by the middle. This ferril has two flat branches *b b*, one above, and the other below, at the ends whereof are faſtened little moving pieces which carry two rings, by one of which the teleſcope is ſuſpended to an hook at the end of the ſcrew 3, and at *b* the other a pretty heavy weight is ſuſpended, in order to keep the teleſcope in equilibrio. This weight hangs in the box 5, which is almoſt filled with linſeed-oil, oil of walnuts, or other matter that will not eaſily coagulate, for more aptly ſettling the balance of the weight and teleſcope. The inſtrument carries two teleſcopes cloſe and very parallel to each other; the eye-glaſs of the one being againſt the object-glaſs of the other, that one may ſee each way without turning the level. In the focus of the object-glaſs of each teleſcope muſt a little hair be ſtrained horizontally, to be raiſed and lowered by a little ſcrew. If the tube of the teleſcope be not level, when ſuſpended, a ferril or ring 4, is put on, to be ſlid along till it be level. The hook on which the inſtrument is hung is fixed to a flat wooden croſs; at the end of each arm is a hook to keep the teleſcope ſteady: to the flat croſs is applied another hollow one that ſerves as a caſe for the inſtrument; but the two ends are open, that the teleſcope may be ſecured from the weather, and always ready for uſe. The foot of the inſtrument is a round braſs plate, to which are faſtened three braſs ferrils, moveable by means of joints, wherein are ſtaves; and on this foot is placed the box.

LEVELLING, the finding a line parallel to the horizon, at one or more ſtations, and ſo to determine the height of one place with regard to another.

A truly level ſurface is a ſegment of any ſpherical ſurface which is concentric to the globe of the earth. A true line of level is an arch of a great circle which is imagined to be deſcribed upon a truly level ſurface.

The apparent level is a ſtraight line drawn tangent to an arch or line of true level. Every point of the apparent level, except the point of contact, is higher than the true level.

Dr. Halley ſuggeſts a new method of levelling, which is performed wholly by the barometer, in which the mercury is found to be ſuſpended to ſo much the leſs height as the place is farther remote from the center of the earth. Hence it follows, that the different height of the mercury in two places gives the difference of level. Mr. Derham, from ſome obſervations at the top and bottom of the Monument in London, found that the mercury fell one tenth of an inch at every eighty-two feet of perpendicular aſcent, when the mercury was at thirty inches. Dr. Halley allows of one tenth of an inch for every thirty yards; which, conſidering how accurately barometers are now made, he thinks this method ſufficiently exact to take levels for the conveyance of water, and leſs liable to errors than the common levels. He alſo found a difference of three inches eight tenths between the height of the mercury at top and bottom of Snowdon-hill in Wales. For the common occaſions of levelling, ſet a pole upright in a ſpring, pond, &c. and mark how many feet and inches are above water; then ſet up another pole of equal length with the other, in the place to which the water is to come. Place the center of a quadrant on the top of this laſt pole, the plummet hanging free: ſpy through the ſights the top of the pole in the water, and if the thread cuts any degree of the quadrant, the water may be conveyed by a pipe laid in the earth. If you cannot ſee from one extreme to the other, the operation may be repeated.

LEVER, in mechanics, is any inflexible line, rod, or beam, moveable about or upon a fixed point, called the prop or fulcrum, upon one end of which is the weight to be raiſed; at the other end is the power applied to raiſe it, as the hand, &c. Since the momentum of the weight and power are as the quantities of matter in each multiplied by their reſpective celerities, and the celerities are as the diſtances from the center of motion, and alſo as the ſpaces paſſed through in a perpendicular direction in the ſame time, it muſt follow, that there will be an equilibrium between the weight and power, when they are to each other reciprocally as the diſtances from the center, or as the celerities of the motions, or as the perpendicular aſcent or deſcent in the ſame time; and this univerſally in all mechanical powers whatſoever, which is therefore the fundamental principle of all mechanics.

The lever is of five kinds. The common ſort, where the prop is between the weight and the power, but neareſt the former. When the prop is at one end, the power applied at the other, and the weight between both. When the prop is at one end, the weight at the other, and the power applied between both. The bended lever, which differs only in form from the firſt ſort. When the prop is placed at an equal diſtance between the weight and the power; and this is commonly called the balance. See *Balance.*

LEVERET, among ſportſmen, denotes a hare in the firſt year of her age.

* LEVERPOOLE, LIVERPOOLE, or LIRPOOL, a very neat, populous, and flouriſhing ſea-port town, in Lancaſhire, with a harbour on a bay of St. George's channel, and at the mouth of the river Merſee, which abounds with ſalmon, cod-fiſh, flounders, turbot, plaice, and ſmelts, and at full ſea it is more than two miles over. Here is alſo a ferry. An act of parliament paſſed in 1738, for enlarging the entrance into its harbour, erecting a pier on the north and ſouth ſides, &c. It is governed by a mayor, &c. and ſends two members to parliament. The buildings have within the laſt century greatly increaſed. The number of burgeſſes is ſaid to be fifteen hundred. The inhabitants are all merchants, and they carry on an immenſe trade, the largeſt in England, next to London and Briſtol; having great ſucceſs, and very large ſtocks, to all the northern parts of the world, as Hamburg, Norway, and the Baltic; to the Britiſh colonies in America; to Guinea and Ireland; alſo France, Spain, Portugal, and Italy: ſo that there is no trade but that of Turkey, Greenland, and the Eaſt Indies, in which they are not concerned. As it imports almoſt every kind of foreign goods, it has conſequently a large inland trade, and ſhares that to Ireland and Wales with Briſtol, namely, it has all the trade of the eaſt and north ſhores from Dublin to Londonderry; it has a great part of that of North Wales, all the northern counties of England, beſides what goods it ſends to Cheſhire and Staffordſhire by the navigation of the rivers Merſee, Weaver, and Dane, even ſo near the Trent, that its goods are carried by land to Burton. The merchants of Liverpool are alſo concerned with thoſe of Londonderry in the fiſhery on the north coaſt of Ireland. It is the moſt convenient and moſt frequented paſſage to that kingdom: for the Merſee river, or Liverpool water, as the ſailors call it, opens to them on the right as ſoon as they have paſſed Cheſter water by ſea north; and though it is not, even with the addition of the Weaver, which falls into the ſame mouth, near ſo large as the Dee, yet the opening into it, at leaſt as high as Liverpool, is much more commodious; for here ſhips of any burden may come up with their full lading, and ride juſt before the town, if not go into their wet dock. The harbour is defended on the ſouth ſide by a caſtle, and on the weſt by a tower on the river Merſee, which is a ſtrong and ſtately ſtructure; but the town is quite open and unfortified. It has five handſome churches, one of which is a new-built one, beſides ſeveral meeting-houſes. All the new buildings are very genteel, in large, ſpacious, and clean ſtreets; the houſes being of brick, not quite ſo high as in London, though ſeveral which are of hewn ſtone have been built by the Mores of Blankhall, ſome of the ſtreets being called from the name of that family. Here is a fine town-houſe ſtanding on twelve free-ſtone pillars and arches, and under it is their exchange. The wet dock, with its iron flood-gates, at the eaſt end of the town, is a noble work, performed at a very great expence; for here ſhips may be laid up or fitted out, being capable of containing eighty or an hundred ſail, which are ſheltered by the town from the weſt and north winds, and by the hills from the eaſt winds. The cuſtom-houſe, a commodious ſtructure, is cloſe by it. From hence is a navigation further up the Merſee, and that for ſhips of burthen, almoſt as high as Warrington, and alſo upon

the ſouth channel called the river Weaver, but principally for rock-ſalt dug out of the earth both in this county and Cheſhire, and ſhipped off here in large quantities, not only for Devonſhire, Briſtol, and other parts of Somerſetſhire, but round to London, Colcheſter, and ſeveral other places in the ſouth of England, where it is diſſolved in ſea-water, then boiled up again into a ſtronger and finer ſalt, being as good as that ſort called ſalt upon ſalt, which the Dutch make from St. Ube's ſalt, and cure their herrings with it. Here alſo are ſhipped off great quantities of Cheſhire cheeſe. The freemen of this town are free at Briſtol in England, and at Waterford and Wexford in Ireland. Here is a free ſchool, which is a large and beautiful building, having been formerly a chapel. At the weſt end of it there was once a ſtatue of St. Nicholas, long ſince razed, to which the mariners uſed to make offerings when they went to ſea. Here are ſeveral alms-houſes for ſailors widows, and other poor old people; a workhouſe for employing the poor, which has vaſtly reduced the poor's rates; and a noble charity-ſchool, where fifty boys and twelve girls are taught, fed, cloathed, and lodged, by voluntary contributions. At Liverpool the weekly markets are on Wedneſday and Saturday. It lies fourteen miles from Wigan, ſeventeen from Cheſter, thirty-eight from Lancaſter, and 184 from London. Lat. 53 deg. 22 min. N. Lon. 2 deg. 30 min. W.

LEVIGATION, in pharmacy and chemiſtry, the reducing hard bodies to an impalpable powder, by grinding them with water on a porphyry or marble.

LEVITE, in a general ſenſe, means all the deſcendants of Levi, among whom were the Jewiſh prieſts themſelves, who being deſcended from Aaron, were likewiſe of the race of Levi: but it is more particularly uſed for an order of officers in that church, who were employed in performing the manual ſervice of the temple, ſuch as in fetching wood, water, and other things neceſſary for the ſacrifices; and in ſinging and playing upon inſtruments of muſic.

LEVITICUS, a canonical book of the Old Teſtament, ſo called from its containing the laws and regulations rerelating to the prieſts, Levites, and ſacrifices. The ſeven firſt chapters of this book preſcribe the ceremonies to be obſerved in offering burnt ſacrifices, meat offerings, peace-offerings, &c. then Moſes relates in what manner the prieſts were to be conſecrated, and the misfortune of Nadab and Abihu, who offered incenſe to the Lord with ſtrange fire. Upon this occaſion he preſcribes ſome laws concerning the mourning of the prieſts, and forbids their drinking wine while they were employed in the ſervice of the tabernacle. In the eleventh, twelfth, thirteenth, and fourteenth chapters, he lays down rules for diſtinguiſhing clean and unclean beaſts, and concerning the leproſy, purifications, &c. appoints the ceremonies to be obſerved upon the great day of expiation; regulates the degrees of kindred within which perſons were allowed or forbidden to marry: prohibits alliances with the Canaanites, and alſo idolatry, theft, perjury, calumny, &c. In the twenty-third chapter, he takes notice of the principal annual feſtivals, the paſſover, pentecoſt, &c. preſcribes what was to be obſerved in the ſabbatical and jubilee years, and concludes with regulations concerning vows and tithes.

LEVITY, in pyſiology, the privation or want of weight in any body, when compared with another that is heavier than it, in which ſenſe it ſtands oppoſed to gravity. See *Gravitation* and *Gravity*.

LEVY, in law, ſignifies to gather or collect, as to levy money; and to levy a fine of lands, is the paſſing a fine.

* LEWES, a large town of Suſſex, with a market on Saturdays, and three fairs, on May 6, for horned cattle; on Whit-Tueſday, for horned cattle and horſes; and on October 2, for ſheep. It is a very ancient borough by preſcription, by the ſtile of conſtables and inhabitants. The conſtables are choſen yearly at a court-leet held by three lords, namely, the duke of Norfolk, the Duke of Dorſet, and the lord Abergavenny, each in their turns. This town is well built, and agreeable both for air and proſpect; it had formerly a ſtrong caſtle and a priory. It contains ſix pariſh churches, and is eſteemed the beſt borough town in the county. The members of parliament are elected by the inhabitants paying ſcot and lot; and it carries on a good trade. The aſſizes for the county of Suſſex are ſometimes held here. It was noted for a mint in the reign of king Athelſtan, and for a bloody battle in the year 1263, between Henry III. and the barons, wherein the king being defeated, was forced to make peace on their terms. In 1711 there was a charity-ſchool opened,

where twenty boys are taught, cloathed, and maintained, as well as ſupplied with books, at the expence of a private gentleman, and eight more boys were added at the expence of other gentlemen. From a windmill near this town there is a moſt extenſive proſpect which reaches as far as Banſtead Downs in Surry. It is ſeated on the river Ouſe, five miles north of the Engliſh channel, and fifty ſouth of London. Lon. 0 5 E. Lat. 50 50 N.

* LEYDEN, a city of the Netherlands, in the province of Holland, built on an ancient channel of the Rhine, which paſſes through the city, and divides it into ſeveral iſlands, and meets again about the White Gate. It is one of the neateſt and pleaſanteſt towns in the Netherlands, and the largeſt in Holland, except Amſterdam; its ſtreets are clean, wide, and long, divided by ſeveral handſome canals. It has eight gates, whereof the White Gate is the moſt conſiderable. The city ditches are broad and deep; from the gate called Morcht to that of Amſterdam there is nothing but a rampart made of earth, and covered with turf; but on the other ſide it is faced with brick, and has ſeveral baſtions. The eſplanade and ditches are adorned with rows of trees, having a rampart on one ſide, and either meadows or gardens on the other: the canals are planted with rows of trees, and the ſtreet called Rapemburgh is one of the fineſt in Europe This city contains twenty-three wards, ſubdivided into ninety leſſer parts, thirty iſlands, twenty-four canals, one hundred and eighty ſtreets, ninety-five bridges, and forty towers on the walls. There are ſeveral good churches in this city. They have hoſpitals here of all ſorts, which are kept with a neatneſs peculiar to this city; that of the orphans only maintains five hundred children. The ſtadthouſe is a very good building, with a very handſome ſtone front, and in the burgomaſter's chamber there is a painting of the laſt day by Luke of Leyden. But the chief ſtructure in this city is the famous univerſity, founded by the States General in 1573, to make the inhabitants amends for their loſſes, and hardſhips they had undergone in a dreadful ſiege. The ſcholars are computed at about two thouſand. The univerſity is governed by three curators; the rector is choſen yearly out of three who are preſented to the ſtates, and on him the ſcholars only depend. Joining to the ſchools is a phyſic garden, where the profeſſor of botany reads his lectures: a great number of rarities are to be ſeen in the galleries, and in the Indian cabinet. There are here made broad and narrow cloths, ſerges, and camblets, which they tranſport to all parts of the world. Their gardens likewiſe yield them conſiderable profit, their garden-ſtuff being carried as far as Amſterdam. It is eight miles from Delft, and fourteen north of Rotterdam. Long. 4 10 E. Lat. 52 15 N.

LEXICON, the ſame with dictionary. It is generally uſed in ſpeaking of Greek dictionaries.

LIBATION, a religious ceremony among the ancient pagans, which conſiſted in an effuſion of liquors poured on the head of the victims prepared for ſacrifice. Libations were alſo in uſe among the Hebrews, who poured a tun of wine on the victim after it was killed, and the ſeveral pieces of the ſacrifice were laid on the altar, ready to be conſumed in the flames.

LIBEL, injurious reproaches or accuſations againſt a perſon, written and publiſhed in order to expoſe him to public contempt, hatred, or ridicule.

LIBEL, in the law of Scotland, implies an indictment.

LIBELLA, or LIBELLULA, in the hiſtory of inſects, a genus of four winged flies, called in Engliſh dragon-flies, or adder-flies.

LIBERATE, in law, a writ that lies for the payment of a penſion, or annual ſum, granted under the great ſeal, being directed to the treaſurer and chamberlains of the exchequer.

LIBERTUS, in Roman antiquity, a perſon who from being a ſlave had obtained his freedom.

LIBERTY, *Libertas*, in general, denotes a ſtate of freedom, in contradiſtinction to ſlavery. See *Freedom.*

According to Cicero, liberty is the power of living as a man pleaſes, or without being controlled by another.

In a legal ſenſe, liberty ſignifies ſome privilege that is held by charter or preſcripton.

LIBRA, the balance, in aſtronomy, one of the twelve ſigns of the zodiac, the ſixth in order, ſo called, becauſe when the ſun enters it the days and nights are equal, as if weighed in a balance.

LIBRA, in Roman antiquity, a pound weight; alſo a coin, equal in value to twenty denarii.

LIBRARY, an edifice, or apartment deſtined for the placing of books; or the books themſelves lodged therein.

LICENCE, in law, an authority given to a perſon to do ſome lawful act.

LICENTIATE, one who has obtained the degree of a licence.

LICHEN, *Cinereus Terreſtris*, aſh-coloured ground liverwort, in botany, a ſpecies of moſs, which grows on commons and open heaths, ſpreads quickly on the ground, and is to be met with at all times of the year, but is ſuppoſed to be in its greateſt vigour about the end of autumn. This herb is ſaid to be a warm diuretic. It is particularly celebrated as a preſervative againſt the terrible conſequences of the bite of a mad dog. An account of the remarkable efficacy, in this intention, of a powder compoſed of the dry leaves and black pepper, was communicated to the Royal Society by Mr. Dampier, and publiſhed in N°. 237 of the Philoſophical Tranſactions. This powder was afterwards inſerted, in the year 1721, into the London Pharmacopœia, at the deſire of Dr. Mead, who had large experience of its good effects, and who declares that he had never known it to fail, where it had been uſed, with the aſſiſtance of cold bathing, before the hydrophobia began.

* LICHFIELD, or LITCHFIELD, a city of Staffordſhire, which, joined with Coventry, forms one biſhoprick. The city ſtands low, and is divided into two parts by a clear rivulet, over which are two cauſeways, with ſluices upon them. That part on the ſouth ſide is called the city, and the other the cloſe, as being incloſed within a wall, and a good deep dry trench on all ſides, except towards the city, where it is defended by a large marſh formed by the above-mentioned brook. The cathedral, one of the fineſt in England for elegance and regularity, ſtands in this cloſe. It was rebuilt by biſhop Roger de Clinton in 1148. The weſt end is richly decorated with the ſtatues of all the kings of Jeruſalem from David to the captivity. It ſuffered much in the civil wars, having been often taken and retaken, and particularly the imagery and carved work on the front were effaced; and it is ſaid that the rude ſoldiers frequently fired at the croſs over the weſt window, but could not demoliſh it. Theſe alſo entirely ruined all the ornaments of the inſide, with the braſs inſcriptions, tombs, &c. but it has been well repaired ſince the reſtoration by the care of biſhop Hackett, and the generous contributions of ſeveral benefactors. It is adorned with three ſuch elegant and lofty ſpires as no church in England can boaſt of. The choir is paved with alabaſter and cannel coal, in imitation of black and white marble. The prebendaries ſtalls are of excellent workmanſhip, and re-erected moſtly at the charges of the country gentlemen, each ſtall bearing the arms of its reſpective benefactor. In the cloſe is the biſhop's palace and deanery, as are the houſes of the prebendaries in a court on the hill, all very handſome. Here are three other churches, among which that of St. Michael has a church-yard containing ſix or ſeven acres of ground. Lichfield was once an archiepiſcopal ſee over the Mercians and Eaſt Angles; and the biſhopric of Cheſter is ſaid to have been diſmembered from it. It is a town and county, with a juriſdiction of ten or twelve miles round, which circuit the ſheriff rides September 8, annually. The town is under the government of two bailiffs, &c. who return two members to parliament. Its weekly markets are on Tueſday and Friday; and its annual fairs, on Shrove-Monday, for cattle, ſheep, bacon, cheeſe, and iron; on May 12, for ſheep with other cattle; and on Friday before November 8, for geeſe and cheeſe. Here was formerly a caſtle, long ſince deſtroyed. Next to Cheſter this is the principal city of all the north-weſt part of England. The houſes are ſtraggling in it, though ſome of them are very handſome; and as it is a thoroughfare to the north-weſt counties, has ſeveral very good inns. The neighbouring parts all about are both pleaſant and fruitful. The brook here at about three miles off empties itſelf into the river Trent. The ſtreets are well paved, and kept very clean, and in the neighbourhood are frequent horſe-races. St. Chad, or St. Cedda, formerly one of its biſhops, lived an hermetical life by the ſpring near Stow church, in a little cell; and the Monaſticon mentions a ſhrine given for him, which it ſays coſt 200,000 l. Litchfield gives title of earl to the deſcendant of Edward Henry Lee, who was created by king Charles II. and is alſo the birth-place of the ingenious Dr. Samuel Johnſon, author of the elaborate Engliſh Dictionary, Vanity of Human Wiſhes, Rambler, Raſſelas, London, a poem, and other writings both in proſe and verſe, well known to the learned world.

LICTORS, *Lictores*, in Roman antiquity, the ſerjeants or beadles who carried the faſces before the ſupreme magiſtrates: it was alſo a part of their office to be the public executioners in beheading, ſcourging, &c.

LIEGE, in law, a term ſometimes uſed for liege-lord, or one who owns no ſuperior; and ſometimes for liege-man, or one who owes allegiance to the liege-lord. In our ſtatutes, the king's ſubjects are ſometimes called lieges, or liege-people.

* LIEGE, the capital city of the biſhopric of the ſame name, in Germany, is large, populous, wealthy, and remarkable for its antiquity, the magnificence of its public buildings, and the vaſt number of its churches. It is ſeated in a valley ſurrounded by high mountains, ſeparated from each other by pleaſant dales, which are watered by three little rivers; there are ſeveral hills and valleys within the walls, which are about four miles in circumference, and ſome iſlands, made by the river Maeſe, two branches of which run through the town. It is divided into three parts, the city, the iſland, and the Outer-Maeſe; it has 16 gates, 17 bridges, and 154 ſtreets; theſe laſt are pretty broad, but are neither clean nor regular; and moſt of the private houſes are built of wood; a clear ſtream generally runs through the middle of the ſtreets, and many of the beſt houſes have fountains in their courts and gardens. Here are upwards of 100 churches; and the cathedral, dedicated to St. Lambert, is a magnificent ſtructure built with ſtone, and within are a great number of relics: the buſto of St. Lambert is in ſilver, as alſo the ſtatues of the Virgin Mary and Joſeph, as big as life; five great coffers, which hold the relics, are of ſilver, and St. George on horſeback is of maſſy gold. They have veſtments given by pope Gregory, adorned with large pearls, intermixed with diamonds. St. Peter's is the moſt admirable of the pariſh churches, being ſet off with marble ornaments and paintings: all the religious orders have handſome convents and churches. This city is governed by two burgomaſters, twenty counſellors, two perpetual counſellors, and a recorder; beſides which they have a chief mayor and two ſubordinate mayors. The town is ſeated very conveniently for trade, on account of the river Maeſe, which is navigable up to this place. This city was bombarded in 1691, and delivered to the French in 1701; it was retaken by the allies in 1702; and the French attempted to get poſſeſſion of it again in 1705, at the approach of the duke of Marlborough, but it was reſtored to its biſhop by the treaty of Baden; it is 12 miles N. E. of Hay; 62 S. W. of Cologne, and 175 N. E. of Paris. The magiſtrates of Liege pretend that it is an imperial city, or ſovereign ſtate; but they have ſuffered very ſeverely for oppoſing the authority of their biſhop, who is in fact abſolute ſovereign of the city, as well as the biſhopric; he is choſen by the 60 major canons, who are moſt of them of noble extraction. This biſhop is one of the moſt conſiderable eccleſiaſtical princes of Germany, having within his dioceſe 52 baronies, 18 walled towns, and 400 populous villages, with a revenue of 300,000 ducats per annum, and is able to maintain a body of 8000 men, without oppreſſing his ſubjects, who are principally Roman Catholics. Long. 5 28 E. Lat. 50 46 N.

LIENTERY, in medicine, a diſorder proceeding from preternatural ſmoothneſs of the inteſtines, in conſequence of which what is diſcharged by ſtool greatly reſembles the aliments, both in colour and ſubſtance. The cauſe of this diſorder, according to Fernelius, is not an obſtructed or hindered diſtribution of the aliments, but a weakneſs of the firſt concoction, in conſequence of which the aliments paſs through the inteſtines unchanged. The principal intention of cure in a lientery, according to Etmuller, is to ſtrengthen and corroborate the ſtomach; which end is moſt effectually obtained by rhubarb, preparations of coral and quinces. All the medicines recommended againſt vomiting, are alſo proper in this diſorder. Waldſchmidius informs us, that the moſt ſimple and eaſily prepared ſtomachics are more beneficial in a lientery, than thoſe of the compound kind. The moſt proper ſtomachics, according to that author, are preſerved nutmeg, preſerved ginger, the white of an egg boiled with vinegar, and wormwood wine prepared with maſtich.

LIEUTENANT, an officer who ſupplies the place, and diſcharges the office of a ſuperior in his abſence. Of theſe, ſome are civil, as the lords-lieutenants of kingdoms, and the lords-lieutenants of counties; and others are military, as the lieutenant-general, lieutenant-general of the artillery, lieutenant-colonel, lieutenant of the artillery of the Tower, lieutenant of horſe, foot, ſhips of war, &c.

LORD-LIEUTENANT *of Ireland* is a viceroy, and has all the ſtate and grandeur of a king of England, except being ſerved upon the knee. He has the power of making war and peace, of beſtowing all the offices under the government, of dubbing knights, and of pardoning all crimes except high treaſon; he alſo calls and prorogues the parliament, but no bill can paſs without the royal aſſent. He is aſſiſted in his government by a privy-council; and on his leaving the kingdom, he appoints the lords of the regency, who govern in his abſence.

LORDS-LIEUTENANTS *of Counties* are officers who, upon any invaſion or rebellion, have power to raiſe the militia, and to give commiſſions to colonels and other officers, to arm and form them into regiments, troops, and companies. Under the lords-lieutenants are deputy-lieutenants, who have the ſame power; theſe are choſen by the lords-lieutenants, out of the principal gentlemen of each county, and preſented to the king for his approbation.

LIEUTENANT-GENERAL, an officer next in rank to the general; in battle, he commands one of the wings; in a march, a detachment, or a flying camp; alſo a quarter, at a ſiege, or one of the attacks when it is his day of duty.

LIEUTENANT *of a ſhip of war*, the officer next in command to the captain, and who governs the ſhip in his abſence. In the Britiſh navy an officer muſt have ſerved ſix years at ſea, two of which he muſt have been mate or midſhipman in ſome of the king's ſhips, before he can be appointed a lieutenant; he muſt alſo paſs an examination. The number of lieutenants appointed to a ſhip is always in proportion to her rate, a firſt rate having ſix, and a ſixth rate only one. In an engagement the ſtation of the lieutenants is to ſuperintend the manœuvre of the great guns, and obſerve that they are properly ſupplied with powder and ſhot, &c. The lieutenant ranks with captains of horſe and foot. The half-pay of a lieutenant of the navy, which was before only two ſhillings per day, has lately been raiſed to three ſhillings per day.

LIFE, *Vita*, in general, a kind of active operative exiſtence, and conceived to conſiſt in motion.

LIFE is uſed in a more particular ſenſe to ſignify the duration of an animal's being; or the ſpace of time which paſſes between its birth and death.

LIGAMENT, in anatomy, a ſtrong compact ſubſtance, ſerving to join two bones together. A ligament is more flexible than a cartilage, not eaſily ruptured or torn, and does not yield, or at leaſt very little, when pulled.

LIGATURE, in ſurgery, a cord, band, or ſtring; or the binding any part of the body with a cord, band, fillet, &c. whether of leather, linen, &c. Ligatures are uſed to extend and replace bones that are broken or diſlocated; to tie the patients down in lithotomy and amputations; to tie upon the veins in phlebotomy, or the arteries in amputations, or in large wounds; to ſecure the ſplints that are applied to fractures; to tie up the proceſſes of the peritonæum, with the ſpermatic veſſels in caſtration; and laſtly, in taking off warts or other excreſcences by ligature.

LIGHT, *Lux*, in philoſophy, certain inconceivable ſmall particles of matter, of different magnitudes, which are emitted or reflected from every point in the ſurface of a luminous body in right lines, and in all directions, with an unparalleled velocity, and whoſe power and intenſity decreaſe as the ſquares of the diſtances increaſe. That light is a material ſubſtance, and what we properly call body, is not to be doubted; becauſe we find it ſomething that has motion, or is propagated in time; ſomething that acts upon our bodies, and produces great alterations and changes in their natures and forms. It is ſomething that bodies act upon, by reflecting, inflecting, and refracting it on their ſurfaces, and in their pores: and it would appear to have weight, and all other ſenſible qualities of common matter, were it not that the ſmallneſs of its quantity renders them entirely imperceptible to us. Nor are we to conſider light only as a body, but as the moſt active principle or moſt general agent in nature; and it is, perhaps, the true primum mobile, or the ſpring of motion and action in all other bodies. Were the particles of light to be annihilated, we ſhould ſee no marks or footſteps of fire or heat remaining, and therefore no power of motion in bodies; but all things would put on the appearance of lifeleſs inert matter, rigid and inflexible, as it would be abſolutely cold and dark. The divine wiſdom and providence appear, perhaps, in nothing ſo remarkably as in the extreme ſubtility of the particles of light: without this qualification it could not have pervaded the pores of bodies, and ſo we could have had none of thoſe which we call diaphanous or tranſparent ſubſtances, and every thing but the ſurface of a body would have been concealed from the ſight of mankind. Again, the velocity of a body is always as the quantity of matter inverſely; and therefore, the ſmaller the body, the greater velocity it is ſuſceptible of from the ſame force; whence it comes to paſs that light is thus qualified to be tranſmitted through immenſe diſtances in a ſmall and inſenſible part of time; which thing was quite neceſſary, according to the preſent frame and ſtate of nature. But laſtly, it was abſolutely neceſſary that the particles of light ſhould be ſo exceeding ſmall, that, when compounded with its velocity, it ſhould produce no ſenſible force, as it muſt otherwiſe have done, and which, therefore, could not have been borne by the tender and delicate texture of the ſeveral parts of vegetable and animal bodies. To give an example: the velocity of a particle of light is found to be at the rate of 897600000 feet per ſecond: ſuppoſe its matter to be but one million part of a grain, then its force to ſtrike an object would be as $\frac{897600000}{1000000} = 897{,}6$ feet per ſecond for one grain; or it would ſtrike with the ſame force that one grain weight would do falling from half the height, viz. through 448,8 feet; which we ſhould find to be very great, was the experiment to be made on the ſenſible coats of the eye. Since the weight of bodies is proportional to the quantity of matter, it follows, that, where the latter is diminiſhed indefinitely, the former will be ſo too; therefore, the weight of light muſt be inſenſible to ever ſo great a quantity of it. Dr. Boerhaave cauſed a globe of iron, twelve inches in diameter, to be heated red-hot, and ſuſpended at the end of a very exact ballance, and counterpoiſed by weights at the other end very nicely, and thus let it hang till all the particles of heat or light were eſcaped, when he found the equilibre of the ballance no ways altered; which plainly proves the above theſis. See the article *Fire*.

That the particles of light have not only magnitude, but that in different degrees alſo, is another, and perhaps the moſt ſubtile, diſcovery of the Newtonian philoſophy. The comparative terms of greater and leſſer are now as applicable to the particles of light as to any other bodies. This is abſolutely proved by the different refrangibility they are found to have in paſſing through a priſmatic figure of glaſs or water; for the power of the priſm detains the iſſuing particle, and draws it a little towards the ſurface; and, ſince this power is the ſame, it would have the ſame effect on all the particles of light, if they were all of an equal magnitude, becauſe they have all an equal velocity. But ſince this effect is different among the particles, ſome being detained and drawn aſide to a greater diſtance than others, it follows, they muſt be leſs in magnitude, to become more ſubject to the influence of the attracting ſurface; in like manner as the electric effluvia will act upon and agitate very ſmall and light bodies, much ſooner and more eaſily than they can move thoſe which are larger. But of this more when we come to ſpeak of the manner in which this power acts in refracting the rays of light. See *Refraction*.

If light were not reflected from every point of the ſurface of a body in all directions every way, there might be aſſigned a point of ſpace where a ray of light, from ſuch a point in the ſurface, does not come; and there the ſaid point of the ſurface could not be viſible; but becauſe the eye can find no point of ſpace in all the viſible hemiſphere reſpecting that point, but where it is viſible; therefore a ray of light is reflected from that point to every part of ſpace, from whence a right line to that point can be drawn.

That the rays of light proceed in a right-lined direction, is evident from hence, that whatever the figure of the body be, if it be held perpendicular to the rays of light, it will always caſt a ſhadow of the ſame figure againſt a parallel plane. Thus a circle will produce a circular ſhadow, a triangle a triangular one, and ſo on. Which plainly ſhews that the rays of light paſs by the extremities of theſe bodies in right-lined directions, excepting theſe only which paſs contiguous to the edges of the body; for they will be a little inflected, which will cauſe the extremity of the ſhadow to be not ſo diſtinct and well defined as it otherwiſe would be.

As all the other affections of light, ſo that of its velocity was utterly unknown to all the ancient, and moſt of the modern philoſophers, who, before the time of Mr. Romer, were of opinion that the motion of light was inſtantaneous, or that it was propagated through immenſe ſpaces in an inſtant. But Mr. Romer, and other philoſophers, about this time, making frequent obſervations on the eclipſes of Jupiter's moons, found that the velocity of light is to that of a cannon-ball, as 897,600,000 to 578, or as 1,550,000 to 1.

For the properties of reflected and refracted light, ſee the articles *Reflection* and *Refraction*.

LIGHT is alſo uſed to denote the diſpoſition of objects, with regard to the receiving of light; thus, the doors, windows, &c. of houſes, are called lights.

For the lights and ſhades of paintings, &c. ſee *Claro-Obſcuro*.

LIGHTER, a ſort of veſſel or large boat employed in harbours or rivers, to bring goods to and from a ſhip in the act of lading and delivering the cargo.

LIGHT-HOUSE, among ſailors, a little houſe erected on a cape, hill, or promontory, near the ſea-coaſt, for the direction of ſhips which are paſſing that way: for this purpoſe it is furniſhed with great lights at the top, and has always ſomebody to watch them. As the lights may be ſeen at a great diſtance, they are very ſerviceable in guiding ſhips which are at a loſs to know where they are.

LIGHTNING, in phyſiology, the burſting of fire from a cloud. From Dr. Franklin's experiments, it appears, that lightning is only electrical fire drawn off from the clouds; and, in effect, this electricity has been collected during thunder in iron bars, or on tin tubes, in many parts of Europe. See *Electricity*.

Thunder then, or lightning, is in the hand of nature, what electricity is in ours; the wonders which we now exhibit at pleaſure, are only little imitations of thoſe great effects which frighten us. A cloud prepared by the action of winds, by heat, by a mixture of exhalations, &c. is the electrified body; and watery clouds, or terreſtrial matter, the non-electrics which excite it. See *Thunder*.

LIGULATED, among botaniſts, an appellation given to ſuch floſcules as have a ſtraight end turned downwards, with three indentures, but not divided into ſegments.

LIGUSTICUM, lovage, in botany, a genus of plants.

LIGUSTRUM, privet, in botany.

LILAC, in botany, a genus of trees, otherwiſe called ſyringa. See *Syringa*.

LILIACEOUS, an appellation given to ſuch flowers as reſemble that of the lily.

LILIO-NARCISSUS, or AMARYLLIS, in botany, a genus of plants.

LILIUM CONVALLIUM, lily of the valley.

* LILLO (George) an excellent dramatic writer, was born near Moorgate, in London, in 1693, where he purſued his buſineſs of a jeweller many years, with the faireſt reputation. He was ſtrongly attached to the Muſes, and all his compoſitions tend to the promotion of virtue, morality, and religion. Mr. Lillo, in purſuing his aim, made a happy choice of his ſubject. He does not introduce kings and heroes on the ſtage; yet by exhibiting tragic ſcenes in common and domeſtic life, and repreſenting the ruin of private families, by luſt, avarice, and other vices, he raiſes the paſſions to an equal height, and exacts a tribute of tears from the audience. It is ſaid, that when his George Barnewell firſt came upon the ſtage, many of the critics attended its firſt repreſentation with the moſt unfavourable impreſſions, and the ſtory being founded on an old ballad, they brought it with them, intending to make pleaſant remarks and ludicrous compariſons between the ancient ditty, and the modern drama; but the merit of the play ſoon got the better of their contempt, and preſented them ſcenes written ſo truly to the heart, that they dropped their ballads, and took out their handkerchiefs. Mr. Lillo wrote four other tragedies, The Chriſtian Hero; Elmerick; Fatal Curioſity; and Arden of Feverſham; and dying in the year 1739, left behind him a moſt excellent character.

LILY, *lilium*, in botany, the name of a large genus of plants. All ſorts of lilies and martagons are propagated by ſowing their ſeeds; and if the ſeeds are carefully ſaved from good flowers, the martagons very frequently afford very beautiful varieties. The roots of the white lily are emollient, maturating, and greatly ſuppurative. They are uſed externally in cataplaſms for theſe purpoſes with ſucceſs. The common form of applying them is boiled and bruiſed; but ſome prefer the roaſting them till tender, and then beating them to a paſte with oil, in which form they are ſaid to be excellent againſt burns. Gerard recommends them internally in dropſies.

* LIMA, the capital of the audience of Lima, and the whole empire of Peru in North America, is peopled with above 15,000 Creoles, or Spaniards, and about 40,000 negroes. The city is ſurrounded with walls, and defended with many baſtions and ramparts, eight yards in height, but they have few cannon, and therefore could make but a poor defence. The ſtreets are handſome, and as ſtraight as

a line, but the houſes are only one ſtory high, on account of the earthquakes, and are covered only with mats or reeds on the top, which is not inconvenient here, becauſe it never rains. Some have long galleries in the front, and are handſomely adorned on the inſide. Some of the houſes are covered with a fine ſort of tiſſue, or curious cotton cloth; and they plant trees about their houſes to keep off the heat of the ſun. What theſe houſes want in height is made up in length and breadth, there being often ten or twelve large apartments. The royal ſquare of Lima is very handſome, in the middle of which is a fountain of bronze, and on the eaſt and weſt ſides are divers ſuperb public buildings. The river which croſſes Lima is divided into ſmall channels, which enter into many of the houſes, and is of great utility to the inhabitants to water their gardens, and other purpoſes. The churches and convents of Lima are full of riches, and extremely magnificent, inſomuch that religion is as it were ſtifled under the weight of gold and ſilver, and its humility is quite loſt. Many of their ſaints are of maſſy gold ſet off with precious ſtones. The inhabitants of Lima are generally the richeſt in all Peru, and value themſelves upon being the beſt Chriſtians in the world. The eccleſiaſtics ſolemnize all the feſtivals of the church with extraordinary expence, and ridiculous repreſentations, in maſquerades, fire-works, and proceſſions, at which time the ſaints ſhine in gold, ſilver, and precious ſtones: in ſhort, there is ſuch a mixture of ſeeming devotion and real debauchery among all the inhabitants, not excepting the prieſts, monks, and nuns, that ſuch another place can hardly be found in the world: and yet with all this they are extemely credulous, and have a ſtrong faith in witchcraft and charms. The convents of the monks and nuns are ſo numerous, that they take up a fourth part of the city. This is the only country between the tropics where grapes come to perfection, and where they make good wine, their vineyards and fields being watered with rivulets, which deſcend from the mountains called the Andes, which are the higheſt in the world. In ſhort, this city would be a perfect paradiſe if it were not for the earthquakes, for the adjacent country yields plenty of corn, wine, oil, ſugar, flax, and fruits. The heat of the climate is conſtantly moderated with cool ſea-breezes, or the land-winds from the mountains. This city has been ſeveral times almoſt overturned by earthquakes, as in the years 1586, 1678, and 1687: but the moſt terrible of all happened on the 26th of October 1746, at which time it was almoſt deſtroyed. It is ſeated ſix miles E. of the Pacific Ocean, and of the port-town of Calao, in a fruitful plain, 350 miles W. of Cuſco, on the river Lima. Long. 75 52 W. Lat. 12 2 S.

LIMB, in a general ſenſe, denotes the border or edge of a thing: thus we ſay the limb of a quadrant, of the ſun, of a leaf, &c.

LIMB, in anatomy, an appellation given to the extremities of the body, as the arms and legs. See *Arm* and *Leg*.

LIME, *Calx*, a ſoft, friable ſubſtance, obtained by calcining or burning ſtones, ſhells, and the like. There are ſo many ſpecies of ſtone capable of being burnt into lime, and ſo many that in the different parts of the world are really put to that uſe, that it would be difficult to fix any particular idea to the term limeſtone; but we are to underſtand by it in general, any ſtone that, upon a proper degree of heat, continued a ſufficient time, becomes a white calx, which will make a great ebullition and noiſe on being thrown into water, and will, in fine, fall into a looſe white powder at the bottom of that liquor, after having very ſtrongly impregnated it with its ſoluble particles. The moſt common kind of lime-ſtone is a greyiſh or bluiſh ſtone, found in looſe maſſes, and often veined with red: marble, alabaſter, and all the ſtones that have ſpar for their baſis, may alſo come under the general denomination of limeſtone, ſince they all burn into lime. In general, every ſtone, of whatever kind or colour, that will ferment with aqua-fortis, will alſo burn into lime; and it is of no conſequence to the medicinal uſe of that calx, whether it be made of the one or the other of theſe ſtones. What lime we have in London is made of chalk, which is weaker than that made of ſtone; but it is otherwiſe the ſame. The beſt lime is that made of the hardeſt ſtone: it is not only uſed by architects, builders, plaſterers, dyers, ſugar-refiners, tanners, and many other mechanics, but is an excellent manure for land, where it is ſandy, or a mixed gravel or clay ſoil. In many places it is carried out and laid in heaps, allowing a buſhel to a pole ſquare, or 160 buſhels to an acre. The beſt method of ordering it is to mix it with dung, or with mud drawn from the bottom of rivers; this makes an excellent

lent mixture, eſpecially where the ſoil is ſandy; and in Weſtmoreland they produce fine crops of barley from their ſandy lands, by manuring them with lime and cow dung mixed together. The nature of lime on land is like that of chalk, it works downwards, as the farmers expreſs it; and therefore it is beſt to treat it in the ſame manner, laying it fallow the year before it is to be ploughed up. It is obſerved that if the lime be carried hot out of the kiln, and laid upon the land to cool, it does much better than in any other way. The improvement it makes upon land is owing chiefly to its heat, and the ſalt it contains. It is in much the ſame manner that coal-aſhes and the ſoot of coal becomes uſeful upon the like kind of lands; but the farmers always find that a mixture of good earth and lime, that has laid a conſiderable time together, is better for this purpoſe than the freſh lime alone. Lime is alſo of great utility in medicine, for which uſe it is to be choſen in clean, light, and hard pieces, but not ſtony, ſuch as will not eaſily crumble to pieces between the fingers, and yet will readily break when thrown into water. The beſt lime in the world, on being long expoſed to a damp air, will moulder into a powder, and loſe all its medicinal virtues. Quick-lime is burning and corroſive, and is never given internally; but it is ſometimes uſed in external applications, as made into a paſte with orpiment, ſoap, &c. and uſed as a depilatory. The calx lota, i. e. lime waſhed with water, is no longer a corroſive, but a powerful deſiccative; and lime-water is of great ſervice internally in all cutaneous eruptions, in the cure of obſtinate ulcers, and for diſeaſes of the lungs: for this purpoſe it is generally to be continued a conſiderable time. The preparations of lime in uſe in the ſhops are, the ſimple lime-water; the leſs compound lime-water; the more compound lime-water; and ſeveral kinds of cauſtics. Simple lime-water is made in the following manner: Put a pound of quick-lime into a large earthen pan; pour upon it, by a little at a time, a gallon and a half of water; after the ebullition is thoroughly over, let the liquor ſtand to ſettle, and then pour it clear off, and filter it for uſe. This is principally intended for waſhing old ulcers, and other external purpoſes: when it is to be taken internally, the following additions are made to it, to take off its flavour, or to add to its virtues. Take of liquorice-root an ounce; of ſaſſafras-bark, half an ounce; ſimple lime-water, three quarts; let the whole infuſe together for two days without heat, then filter it for uſe. This laſt preparation is called the leſs compound lime-water. The more compound lime-water is made thus: Take raſpings of guaiacum, half a pound; liquorice-root, an ounce; ſaſſafras-bark, half an ounce; of coriander-ſeed, three drams; of lime-water, three quarts; let the whole ſtand together two days without heat, and then filter it off for uſe.

It has been found by ſeveral late experiments made by Dr. Alſton, that lime-water is an excellent remedy for the ſtone; and that it has alſo been given with extraordinary ſucceſs in acute fevers.

Sponius ſays, that when drank with milk or whey, it performs wonderful effects in internal ulcers, diarrhœas, and the dyſentery.

Lime-water, on being mixed with linſeed-oil, or the oil of olives, and well ſhaken, acquires the conſiſtence of a balſam, which is of ſingular ſervice when applied externally in freſh burns, and alſo conduces to ſtop inflammations. It may alſo be impregnated with copper, by ſtanding in a brazen baſon: by which means it aſſumes a beautiful ſaphire colour, and proves an excellent remedy againſt puſtules, ulcers, ſcabies, and itching of the eyes; and this laſt preparation, mixed with a little ſal-ammoniac, is recommended againſt all humours, films, and other blemiſhes of the eyes, and is ſaid to be very efficacious when the eyes are hurt by the ſmall-pox; and there is no remedy more effectual for cancerous ulcers.

LIME-TREE, the Engliſh name of the tilia. See *Tilia*.

LIMITS *of Equations*, in algebra, a method of diſcovering the limits of the root of equations, by which their ſolutions are much facilitated.

LIMITS *of a Planet*, its excurſion from the ecliptic, or, which is the ſame thing, the points of its greateſt latitude.

LIMITATION, in law, a certain ſpace of time allowed for bringing actions in.

LIMITATION *of Eſtate*, is the length of time an eſtate is to continue in the poſſeſſion of a perſon or family.

LIMITED PROBLEM, a problem that admits but of one ſolution, as to make a circle paſs through three given points, not lying in the ſame right line.

LIMNING, the art of painting in

water colours, in contradiſtinction to painting, which is done in oil-colours.

LIMPET, the Engliſh name of a ſhell-fiſh, called by authors patella.

* LINCOLN, a city of Lincolnſhire, was formerly called Lindum, and is as remarkable as it is ancient. William the Conqueror built here a large ſtrong caſtle for its defence, and much about the ſame time the biſhop Remigius tranſlated his ſee hither from Dorcheſter, and founded the magnificent cathedral, wherein is a brazen tomb of queen Eleanor, wife to Edward I. who died at Hureby, in this county, and another of Catharine Swinford, wife to John of Gaunt, duke of Lancaſter. This building may be ſeen fifty miles northward and thirty ſouthward, and is one of the largeſt in England. This city is governed by a mayor, two ſheriffs, a recorder, twelve aldermen, four chamberlains, as many coroners, about forty common-council-men, a town-clerk, a ſword-bearer, and two ſerjeants at mace. There is a very plentiful market here on Tueſday, for all manner of proviſions, eſpecially fiſh and fowl, and on Friday for goods, with five fairs held on the ſecond Tueſday after April 12th, July 5th, the firſt Wedneſday after September 12, and November 12th, for horſes, cattle, and ſheep. This city abounded formerly with monaſteries, and other religious houſes. It has a bold and noble ſituation upon a high hill, below which, and to the weſtward of the city, the river falls into a great pool, called Swan-pool, from the multitude of its ſwans. This city is mentioned by Leland to have had fifty-two pariſh churches, though it has now but thirteen, beſides the cathedral, or minſter, which is one of the largeſt in England. It is a magnificent ſtructure, and has two great gate-houſes to it from the weſt. The lower part of the front and one of the two towers were built by Remigius; but biſhop Alexander erected the body of the cathedral and the two other towers. In this ſtructure is the famous bell called Tom of Lincoln, which is near five tons in weight, almoſt twenty-three feet in circumference, and will hold four hundred and twenty-four gallons, ale meaſure. Here are alſo in this church two catherine-wheel windows, which are remarkably fine for the workmanſhip and painted glaſs. Here are alſo a chapter-houſe, cloiſter, and library, that are much admired. Here are charity-ſchools, where one hundred and twenty poor children are taught by the widows of clergyman. The city is a county of itſelf, with a juriſdiction twenty miles round, and in the centre of the ruined old caſtle there is a hall for holding the aſſizes. It is fifty-two miles north of Peterborough, thirty-two miles north-eaſt-by-eaſt of Nottingham, ſeventy-two miles ſouth of York, and one hundred and thirty-one north of London. Long. 0 27 W. Lat. 53 15 N.

* LINCOLNSHIRE, a maritime county, about ſixty miles long, and in ſome places thirty broad, bounded on the eaſt by the German ocean, on the weſt by Nottinghamſhire, on the ſouth by Northamptonſhire, and on the north by Yorkſhire, from which it is parted by the Humber. Its principal rivers are the Welland, the Witham, the Trent, the Dun, and the Ankam. It contains thirty hundreds, one city, thirty-nine market-towns, ſix hundred and thirty pariſhes, two caſtles, and three parks. In the times of the Britons and Normans it was part of the country of the Coritani, and under the Saxons it was part of the large kingdom of Mercia. This county is in ſome ſeaſons ſtocked with various kinds of fowl, and in a prodigious number, ſuch as teal, quails, woodcocks, pheaſants, partridges, pewits, godwits, knots, and dottrels.

LINE, *Linea*, in geometry, a quantity extended in length only, without any breadth or thickneſs. It is formed by the flux or motion of a point.

There are two kinds of lines, viz. right lines and curve lines. If the point A, (plate XXIX. fig. 1.) moves towards B; by its motion, it deſcribes a line, and this, if the point go the neareſt way towards B, will be a right or ſtraight line, whoſe diſtinction therefore is the neareſt or ſhorteſt diſtance between any two points; or a line, all whoſe points tend the ſame way. If the point go any way about, as in one of the lines A B C, or A *c* B, it will trace out either a crooked line, as the upper A *c* B, or elſe two more ſtraight ones, as in the lower A C B. Right lines are all of the ſame ſpecies, but curves are of an infinite number of different ſpecies. We may conceive as many as there may be different ratios between their ordinates and abſciſſes. See the articles *Abſciſs* and *Ordinate*.

Curve lines are uſually divided into geometrical and mechanical; the former are thoſe which may be found exactly in all their points; the latter are thoſe, ſome or all of whoſe points are not to be found preciſely, but only tentatively or nearly.

Curve lines are alſo divided into the firſt order, ſecond order, third order, &c.

Lines conſidered as to their poſitions, are either parallel, perpendicular, or oblique, the conſtruction and properties whereof ſee under *Parallel*, &c.

Euclid's ſecond book treats moſtly of lines, and of the effects of their being divided and again multiplied into one another.

LINE, in geography, the ſame with equator. See the article *Equator*.

LINES, in aſtronomy, are, 1. Fiducial line, the line or ruler which paſſes through the middle of an aſtrolabe, or the like inſtrument, and on which the ſights are fitted, otherwiſe called alhidade, index, dioptra, and mediclinium. See the article *Aſtrolabe*. 2. The horizontal line. 3. Iſochronal line. 4. Meridian line. 5. Line of the nodes. See the articles *Horizontal*, *Iſochronal*, *Meridian*, and *Nodes*.

Lines, in perſpective, are, 1. Geometrical line, which is a right line drawn in any manner on the geometrical plane, 2. Terreſtrial line, or fundamental line, is a right line wherein the geometrical plane, and that of the picture or draught interſect one another: ſuch is the line N I, (plate XXIX. fig. 2.) formed by the interſection of the geometrical plane L M, and the perſpective plane H K. 3. Line of the front, is any right line parallel to the terreſtrial line. 4. Vertical line, the common ſection of the vertical and of the draught. 5. Viſual line, the line or ray imagined to paſs from the object to the eye. 6. Line of ſtation, according to ſome writers, is the common ſection of the vertical and geometrical planes. Others, as Lamy, mean by it the perpendicular height of the eye above the geometrical plane. Others, a line on that plane, and perpendicular to the line expreſſing the height of the eye. 7. Objective line, the line of an object from whence the appearance is ſought for in the draught or picture.

LINES, in dialling, are, 1. Horizontal line, the common ſection of the horizon and the dial-plane. See *Dial* 2. Horary lines, or hour lines, the common interſections of the hour circles of the ſphere, with the plane of the dial. 3. Subſtylar line, that line on which the ſtyle or cock of a dial is duly erected, and the repreſentation of ſuch an hour-circle as is perpendicular to the plane of that dial. 4. Equinoctial line, the common interſection of the equinoctial and plane of the dial.

LINE *of Direction*, in mechanics, that wherein a body actually moves, or would move, if it were not hindered. It alſo denotes the line that paſſes through the center of gravity of the heavy body to the center of the earth, which muſt alſo paſs through the fulcrum, or ſupport of the heavy body, without which it would fall.

LINE *of Gravitation*, of any heavy body, a line drawn through its center of gravity, and according to which it tends downwards.

LINES *on the plain Scale*, the line of chords, line of ſines, line of tangents, line of ſecants, line of ſemitangents, line of leagues; the conſtruction and application of which ſee under the words *Scale*, *Sailing*, &c.

LINES *on Gunter's Scale*, are the line of numbers, line of artificial ſines, line of artificial tangents, line of artificial verſed ſines of rhumbs, line of artificial tangents of the meridian line, and line of equal parts.

LINES *of the Sector*, are the line of equal parts, or line of lines, line of tangents, line of ſecants, line of polygons, line of numbers, line of hours, line of latitudes, line of meridians, line of metals, line of ſolids, line of planes; for the conſtruction and uſe of which, ſee *Sector*.

LINES, in fortification, are thoſe of approach, capital, defence, circumvallation, contravallation, of the baſe, &c.

To LINE *a Work*, ſignifies to ſtrengthen a rampart with a firm wall; or to encompaſs a parapet or moat with good turf, &c.

LINE, in the art of war, is underſtood of the diſpoſition of an army, ranged in order of battle, with the front extended as far as may be, that it may not be flanked.

LINE *of Battle*, in the marine, the array in which a fleet or ſquadron of ſhips of war is formed to engage with an enemy. In this manœuvre the ſhips are drawn up about one hundred fathoms diſtant, a-head of each other, the admiral being in the center, whoſe chief judgment is to form it in a proper diſpoſition and ſtrength throughout from the van to the rear; in doing which, particular care muſt be had to make the center ſtrong; for if that is forced or broke through, the battle is looked upon as loſt. Here it is to be obſerved, that in a ſea-action the center is made the ſtrongeſt; whereas in a land-fight it is the weakeſt; and the wings of an army are the ſtrongeſt, leſt the enemy, by forcing a wing, ſhould have the advantage of flanking, and conſequently putting the line in confuſion; for the ſame reaſon alſo, the van and rear of a fleet is not put into diſorder, becauſe care is taken to make them proportionally ſtrong to reſiſt the enemy; therefore the weakeſt part of the line will be in the quarters, as ſupported each way from the center throughout. The line being thus formed, there ought to be a corps-de-reſerve, as many as may be thought neceſſary, if they can be diſpenſed with. But firſt, the line muſt ſtretch out the length of the enemy's, if poſſible, or elſe they will have the advantage, and by tacking and doubling upon your line, put the van and rear into confuſion. It is a maxim in naval diſcipline that a commanding flag-ſhip ſhould never go out of the way for any ſhip whatever, unleſs that ſhip ſhould be diſabled, or that a ſudden ſhift of wind takes her unexpectedly. The reaſon is ſelf-evident: if the admiral gives way for one, or backs and fills for another's fancy or miſconduct, there would be no end to ſuch negligence or over-ſight; therefore the commanding flag-ſhip expects that every ſhip in his fleet will obſerve and take her motions from him and his ſeconds, whoſe diſtance from the admiral ſhould be a ſtandard for every other ſhip to follow in that from each other, as near as poſſible, except when her ſignal is made to back or fill, or make more or leſs ſail. The ſeconds to the commanding flag-ſhip are particularly to regard her, to move as ſhe does, whether the other ſhips do or not, or cannot do; for they are called ſeconds to guard and attend the admiral's ſhip. It is the duty of every officer, as ſoon as the ſignal is diſplayed for the line, to crowd, if poſſible, into his ſtation, and not lie, through indolence or negligence, braced to or a-back, but make ſail to windward, or bear away to leeward, in order to form the line immediately, and then each leading ſhip to mind her tack as the wind is, to lead and give room. The commanding flag-officer, when his ſhips are arranged into a line, obſerves the ſtrength of the enemy's line throughout, and acts accordingly, making more or leſs ſail, or what motion he might think moſt to his advantage. He is not to take his motion from his leading ſhip, but upon ſome particular occaſion, ſignal, notice, or meſſage ſent to him.

In a line of battle the weathermoſt fleet, or that which has the weather-gage, in the ſea-language, is generally allowed to have the advantage, although there are ſeveral arguments on the other hand in favour of the lee-ſide. We ſhall endeavour to ſtate the mutual advantages.

1. The weather-gage is ſooneſt clear of ſmoke; and of courſe that line can better obſerve the ſignals which are ſpread than the ſhips to leeward can, which muſt have the continuance of both its own and of the enemy longer.

2. If the weather-ſhips are more in number than the enemy's fleet, they can detach ſome from their ſquadron, which bearing down upon the rear of the enemy, muſt infallibly throw them into diſorder.

3. The fire-ſhips of the weather-line can, when they are ordered, more eaſily bear down upon the enemy, than thoſe of the lee can ply to windward, which can never be done againſt a line in action; but the weather fire-ſhips can bear down againſt all the reſiſtance that can be made by the enemy.

Advantages of the lee-line.— 1. If one, two, or more of the ſhips to windward ſhould be diſabled, they muſt inevitably drive to leeward, and become a prey to the enemy.

2. The ſhips of the lee-line can more readily bear away before the wind, and have their places ſupplied by ſhips from the corps-de-reſerve, in caſe of being diſabled or meeting with any diſaſter.

3. The line to leeward can keep their ports longer open in a ſtrong wind with a high ſea, when thoſe to windward, in all probability, may be obliged to ſhut the ports of their lower tier of guns, to prevent the water from ruſhing in between decks, which may be attended with the moſt fatal conſequences.

4. The lee-line can more eaſily obſerve the men on the decks of the ſhips to windward, as they heel, and when the ſmoke does not intercept their ſight: at which time the marines and top-men may eaſily take aim at, and deſtroy them with muſkets or carabines.

LINE *A-breaſt*, an arrangement in which the whole ſquadron advances uniformly with all the ſhips parallel to each other; ſo that the length of each ſhip forms a right line with the line a-breaſt. See *Diviſion*, *Squadron*, and *Naval Engagement*.

LINE, in genealogy, a ſeries or ſucceſſion of relations in various degrees, all deſcending from the ſame common father. Direct line, is that which goes from father to ſon; being the order of aſcendants and deſcendants.

Collateral line is the order of thoſe who deſcend from ſome common father, related to the former, but out of the line of aſcendants and deſcendants: in this are placed uncles, aunts, couſins, nephews, &c.

LINE alſo denotes a French meaſure, containing the twelfth part of an inch, or the hundred and forty-fourth part of a foot.

LINES, in muſic, the names of thoſe ſtrokes drawn horizontally on a piece of paper, on and between which the characters and notes of muſic are diſpoſed: their number is commonly five; when another is added, for one, two, or more notes, it is called a ledger-line.

LINES, in heraldry, the figures uſed in armories, to divide the ſhield into different parts, and to compoſe different figures. Theſe lines, according to their different forms and names, give denomination to the pieces or figures which they form, except the ſtraight or plain lines.

LINEAMENT, among painters, implies the out-lines of a face.

LINEN, in commerce, a well known kind of cloth, chiefly made of flax. See *Flax*.

LINIMENT, *Linimentum*, in pharmacy, a compoſition ſomewhat thinner than an unguent, and thicker than an oil, uſed for anointing the body in various intentions.

LINNET, *Linaria*, in ornithology, a bird of the ſize of a goldfinch; the head is ſmall and flatted; the eyes are ſmall, and hazel; the beak is conic, very ſmall, and ſharp at the point; the head, neck, and back are variegated with a bright brown and white; the breaſt and belly are pale, but in the male, eſpecially in the ſummer, there is a redneſs on the top of the head and all over the breaſt. This is a ſinging bird, and ſometimes has young ones four times a year, eſpecially if they are taken from the dam before they are able to fly, which may be done four days after they are hatched.

LINSEED, the ſeed of the plant linum. Linſeed bruiſed and ſteeped in water, gives it very ſoon a thick mucilaginous nature, and communicates much of its emollient virtues to it. It is anodyne, attemperating, and of great ſervice in ſuppreſſions of urine from inflammation and heat; it envelops the acid ſalts of the urine, and prevents their vellicating and wounding the tender parts; and in ſome meaſure ſupplies the mucus of the bladder, when abraded and worn off. It is to be given in decoction, or infuſion, on theſe occaſions: the infuſion is not to be made too thick or mucilaginous, becauſe in that caſe it loads the ſtomach, and breeds flatulences in the inteſtines. A ſlight infuſion of linſeed, by way of tea, is recommended by many as an excellent pectoral; and the ſeed is a common and very good ingredient in clyſters. Externally, this ſeed, ground to powder, is an excellent emollient; as is alſo the ſtrong mucilage, made by boiling the ſeeds a long time: the oil drawn from it by expreſſion is of great ſervice in coughs, pleuriſies, and many other caſes.

LINSTOCK, in the military art, a wooden ſtaff, about three feet long, upon one end of which is a piece of iron, which divides in two, turning from one another, having each a place to receive the match, and a ſcrew to keep it faſt: the other end is pointed, and ſhod with iron, to ſtick in the ground. It is uſed, by gunners, to fire the guns.

LINT, *Linum*, the flax of which linen is made.

In ſurgery, the term lint denotes the ſcrapings of linen which is uſed in dreſſing wounds, and is made up in various forms, as tents, doſſils, pledgets, &c.

LINTEL, in architecture, a piece of timber that lies horizontally over door-poſts and window-jambs, as well to bear the thickneſs of the wall over it, as to bind the ſides of the wall together.

LION, *Leo*, in zoology, the ſtrongeſt and fierceſt of all quadrupeds.

The head of the lion appears very large in proportion to its body, and is the moſt fleſhy of the heads of all the known animals. Its jaw-bones alſo are remarkably large. The breaſt alſo appears very large, but this is only owing to the great quantity of long hair that covers it, for the ſternum is ſmaller than that of moſt animals of the ſame ſize. The tail, which is very long, appears alſo of the ſame thickneſs all the way, but this is wholly owing to the growth of the hair. The tail itſelf is largeſt at the baſe, and then goes taper to the point; but the hair, being very ſhort near its baſe, and continuing to grow longer all the way, as that decreaſes in thickneſs, is ſo exactly proportioned in this growth, that it always gives the whole tail this regular appearance. The long hair that grows about the neck and breaſt, and makes what is called the mane of the lion, only differs from the hair of the reſt of the body in length, having no greater thickneſs, or rigidity, like that of the manes of other animals. The claws of the lion have no caſes, as Pliny pretends they have, for the animal to withdraw them into in walking; but Plutarch, Solinus, and ſome others, are much more in the right, in ſaying that the lion draws them up backwards when he walks, and places them cloſely among the articulations of the toes. It is certain that the laſt joint but one of every toe in this creature has a peculiarly eaſy joint for motion, and by means of this the laſt joint, with the claw that is affixed to it, are very readily drawn up, and hid upon the foot, and placed wholly out of the way of being hurt in walking. The lion has fourteen teeth in each jaw, four inciſores, four canine, and ſix molares. The inciſores are ſmall; the canine are unequal in ſize, two being very large, and two very ſmall; the large ones are an inch and a half long, and are the only ones the ancients allowed to be canine teeth. The molares alſo are irregular in ſize, the anterior ones being very ſmall, the others large, and terminated by three or four points, forming a ſort of flower-de-luce. Ariſtotle, Ælian, and others ſay, that the neck of the lion is all compoſed of one unjointed bone. It appears indeed very rigid in this creature, but it does not proceed from ſo ſtrange a cauſe, but is found owing to this, that the ſpinoſe apophyſes of the vertebræ of the neck are long, and faſtened together by extremely ſtrong and rigid ligaments. The tongue of the lion is very rough and rigid, being covered with a great number of prominences of a hard matter, reſembling that of a cat's claw, and nearly of the ſame ſize, the baſe of each being a round fleſhy prominence on the ſurface of the tongue. The eyes of the lion are clear and bright, even after the creature is dead: The common obſervation that this creature ſleeps with its eyes open, is founded on this, that it has a very thick membrane lodged in the greater canthus of the eyes, which it can extend over the whole eye upon occaſion, as birds do their membrana nictitans, and thus will have no occaſion to ſhut its eye-lids, in order to exclude the light. It is very remarkable that the common cat has all the ſingular ſtructure of the ſeveral parts as the lion has, its claws, feet, tongue and eyes, being of the ſame kind, and its internal parts bearing as ſtrong a reſemblance. The heart of the lion is greatly larger than than that of any other creature of the ſame ſize, being ſix inches long, and four in diameter, in the largeſt part, and terminating in a very ſharp point. The brain is as remarkably ſmall; and upon the compariſon of this with the great quantity of brain in a calf, and purſuing the obſervation through ſeveral other creatures, as to the porportion of brain they have, it does not appear that a ſmall quantity of brain is a mark of folly, but uſually of great ſubtlety, and of a cruel diſpoſition. *Mem. pour l'Hiſtoire des Anim.*

LIP, *Labium*, or *Labrum*, in anatomy, the exterior fleſhy covering of the mouth.

Hare-LIPS, in ſurgery, a diſorder in ſome perſons wherein the upper-lip is ſo divided, as to reſemble a hare's lip. This diviſion is ſometimes ſmall, at other times it is double, like the letter M, and then termed the double hare-lip. Beſides the deformity cauſed by this diſorder, it hinders infants from ſucking, and adults from ſpeaking diſtinctly. Sometimes this accident happens to the lower lip from the ill treatment of a wound, and this is called the ſpurious hare-lip; the true kind is born with the infant. The leſs and more equal the fiſſure of the hare-lip is, it is generally ſo much the more eaſily cured. In ſome infants, the diviſion of the lip is ſo large and irregular, that there can be but little hopes of a cure, which may, however, be eaſily performed on the very ſame lip, when adult. Sometimes too we meet with a tooth projecting forward into the fiſſure; in this caſe it cannot be cured without firſt taking out the tooth. In a recent hare-lip, or one made by a wound, the cure is to be performed by the knotted ſuture.

LIPOTHYMIA, in medicine, the name of a diſeaſe uſually confounded with the ſyncope, but really different from it in many particulars.

The lipothymia is a very conſiderable abolition of the vital and animal faculties, at leaſt to appearance: and the ſyncope is a plenary or a total abolition of them, as far as appears to us at the time. It is eaſy to ſee, however, that theſe are only two different ſtages of the ſame diſtemperature. The lipothymy is ſometimes an idiopathic, ſometimes a ſymptomatic diſeaſe, and moſt frequently attends the ſcurvy, malignant fevers, and other diſorders; the ſyncope is idiopathic, and attacks perſons in health as well as thoſe that are diſeaſed. The lipothymy is always eaſily diſtinguiſhed from a convulſed ſtate of the body, by this, that the limbs are all flaccid in it. The ſyncope differs from death only in degree; and the body being flaccid in this, and growing rigid under the laſt convulſions in death, is the only diſtinction of them in extreme caſes.

LIQUORICE, *liquoritia glycyrrhizza*, and *radix dulcis*, a ſweet root of conſiderable uſe in medicine.

This plant, deſcribed by all the botanical authors under the name of glycyrrhizza vulgaris, grows to four or five feet high, its ſtalks are hard and woody, is leaves are ſmall and roundiſh; and they ſtand many together on the two ſides of a rib, making what authors call a winged leaf. They are viſcous to the touch; the flowers are of the papilionaceous kind, ſmall and bluiſh. The plant is of the diadelphia decandria of Linnæus, and of the herbæ flore papilionaceo ſeu leguminoſæ of Mr. Ray. Liquorice grows wild in many parts of France, Italy, Spain, and Germany. It is cultivated in great abundance in Yorkſhire, and in many other parts of England; and by the good order we keep the ſoil in, produce better roots, longer, evener, and more ſucculent than are to be had from any other part of the world. The reſt of Europe is in great meaſure furniſhed by what grows about Bayonne and Saragoſſa in Spain.

The ground deſigned for liquorice muſt be well dug, and dunged the year before, that the dung may be thoroughly rotted in it; and juſt before it is planted, the earth is to be dug three ſpades deep, and laid very light. The plants to be ſet ſhould be taken from the ſides or heads of the old roots, and each muſt have a very good bud, or eye, otherwiſe they are ſubject to miſcarry; they ſhould alſo be about ten inches long, and perfectly ſound. The beſt ſeaſon for planting them is the end of February, or the beginning of March, and this muſt be done in the following manner: the rows muſt be marked by a line drawn a-croſs the bed, at two feet diſtance; and the plants muſt be ſet in theſe by making a hole of their full depth, and ſomething more, that the eye of the root may be an inch below the ſurface: they muſt alſo be ſet two feet diſtance from each other in the rows. When this is done, the ground may be ſowed over with onions, which, not rooting deep, will do the liquorice roots no injury for the firſt year. In October, when the ſtalks of the liquorice are dead, a little very rotten dung ſhould be ſpread over the ſurface of the ground. Three years after the time of planting, the liquorice will be fit to take up for uſe; and this ſhould be done juſt when the ſtalks are dead off; for, if taken up ſooner, the roots are very apt to ſhrink greatly in their weight. The roots about London look browner than thoſe which have been propagated in a leſs rich ſoil, but then they are much larger, and grow quicker to their ſize. *Miller's Gard. Dict.*

Liquorice is an excellent medicine in coughs, and all diſorders of the breaſt and lungs. It obtunds the ſharpneſs of acrid and ſalt humours. It is alſo recommended againſt diſorders of the kidneys and bladder, and is ſaid to take off the ſenſe of pain in many terrible complaints. It is an ingredient in almoſt all decoctions in ptiſans, in which it is eſteemed for obtunding acrimony, and for giving the whole a very pleaſant taſte, and drowning the worſt flavour of the other ingredients.

Liquorice *Juice*, the inſpiſſated juice of the common liquorice root, and is brought to us in rolls or cakes, covered uſually with bay-leaves from Spain and Holland, from the firſt of which places it obtained the name of Spaniſh juice. It is to be choſen firm, but not tough, hard, and when broken, of a fine ſhining ſurface; ſuch as perfectly melts in the mouth, and does not taſte of burning, nor leaves any harſh or gritty particles between the teeth.

Liquorice juice has the ſame virtues with the root it is produced from. It is a very famous remedy among the common people for coughs and all diſorders of the breaſt and lungs. It is commonly taken alone, holding a ſmall piece of it in the mouth till it gradually melts there; but the more agreeable way of taking it is in form of lozenges, of which there are many kinds, which it is the baſis of; in theſe it is mixed with other pectoral ingredients, and has the advantage of melting more eaſily in the mouth than in its own form. It is alſo an ingredient in the theriaca and ſome other of the compoſitions of the ſhops.

* LISBON, the capital city of the kingdom of Portugal. It was formerly con-

ſiderable for its extent, handſome ſtructures, riches, and its being the capital of the kingdom, the reſidence of the kings of Portugal, and an archbiſhop's ſee; but on the firſt of November, 1755, it was almoſt ruined by an earthquake. This city is built upon ſeven hills, and before that calamity, contained about thirty thouſand houſes, two hundred thouſand inhabitants, forty pariſh churches, without taking in the monaſteries, twenty-ſix gates on the ſide of the river Tagus, and ſeventeen on the land ſide. It had twenty monaſteries for monks, and eighteen nunneries, containing at leaſt two thouſand perſons. It is ſtill a place of great trade, and much frequented. The houſes of the citizens are very mean, with lattice windows, but thoſe of the nobility are elegantly built with ſtone, with large gardens belonging thereto. The ſtreets are narrow and ſteep, which makes it very inconvenient for coaches, and therefore litters are uſed in their ſtead; there are ſeveral handſome ſquares, the fineſt of which had the king's palace on one ſide, and on another ſide the river, from whence may be ſeen large fleets of ſhips at anchor, and others perpetually going in and out of that ſpacious harbour; in this ſquare they had their bull fights, where people of all conditions aſſembled to behold them, and here alſo the officers of the inquiſition performed thoſe terrible executions on all thoſe who differ from the Roman church. The harbour of Liſbon will contain ſeveral thouſand ſail of ſhips, the river being three miles over, and there are ſhips of every nation in Europe riding in it. Beyond this there is a beautiful country, intermixed with towns and villages. This city was ſurrounded only by a ſingle wall, on which were ſeventy-ſeven antique towers, of no great ſtrength. It is ten miles from the mouth of the Tagus, two hundred and fifty ſouth-by-weſt of Madrid, eight hundred and thirty from Paris. Long. 8 2 W. Lat. 38 45 N.

LIST, in commerce, the border of cloth, or of a ſtuff; ſerving not only to ſhew their quality, but to preſerve them from being torn in the operations of fulling, dyeing, and the like.

Liſt is uſed on various occaſions; but chiefly by gardeners, for ſecuring their wall-trees.

LIST, in architecture, a little ſquare moulding, otherwiſe called a fillet, liſtel, &c.

LITANY, a ſolemn form of ſupplication to God, in which the prieſt utters ſome things fit to be prayed for, and the people join in their interceſſion.

LITERATI, in general, denotes men of learning; but is more particularly uſed by the Chineſe, for ſuch perſons as are able to read and write their language, which is remarkably difficult.

LITHARGE, a metalline ſubſtance, formed of the ſpume of lead. This preparation, or, as it may be more properly called, recrement of lead, is of two kinds, differing in colour, though in no other quality: the ancients, as well as moderns, obſerved this difference, and called the one litharge of gold, and the other litharge of ſilver. This recrement of lead is not prepared by a formal proceſs on purpoſe; it is collected from the furnaces where ſilver is ſeparated from lead, or from thoſe where gold and ſilver are purified by means of that metal; but in the furnaces uſed for either of theſe purpoſes, it is generally run into lead again to ſerve for the ſame or other uſes. The litharge ſold in the ſhops is produced in the copper works, where lead has been uſed to purify that metal, or to ſeparate ſilver from it. The greateſt quantities of litharge are brought from Sweden, Germany, and Denmark. Poland furniſhes ſome, as does alſo England, but the Dantzic kind is eſteemed the moſt valuable. The beſt litharge is that which is almoſt calcined, and of the livelieſt colour. Litharge on the whole is properly lead vitrified, either alone or with a mixture of copper. Litharge is ſoluble in oil and all other unctuous ſubſtances, and thus diſſolved, it makes the baſis of a great part of the ointments and plaſters of the ſhops. It is drying, abſtergent, and ſlightly aſtrictive; and hence it is of great uſe in cleanſing ulcers, and diſpoſing them to incarnate.

LITHONTRIPTICS, medicines which either break, or are ſuppoſed to have the virtue of breaking ſtones in the urinary paſſages.

LITHOPHYTA, in botany, a ſubdiviſion of plants, ſo called from their approaching to a ſtony hardneſs, comprehending the iſis, ſpongia, millepora, tubipora, &c.

LITHOSPERMUM, gromwell, in botany, a genus of plants.

The ſeeds of which being the only parts uſed in medicine, are accounted diuretic Emulſions are made of them, with dog's graſs water.

LITHOTOMY, in ſurgery, cutting for the ſtone. Mr. Sharp lays down the following method of ſearching for the ſtone. The patient being laid on an horizontal table with his thighs elevated, and a little extended, paſs the ſound, or catheter, with the concave part towards you, till it meets with ſome reſiſtance in the perinæum, a little above the anus; then turning it without much force, puſh it gently on into the bladder, and if it meets with an obſtruction at the neck, raiſe its extremity upwards, by inclining the handle of it towards you; and if it does not then ſlip in, withdraw it a quarter of an inch, and introducing your fore-finger into the rectum, lift it up, and it will ſeldom fail to enter. Though, upon ſearching, the ſurgeon may be aſſured of a ſtone in the bladder, yet it is not without farther inquiry to operate immediately; ſince there are ſome obſtacles that forbid the operation, either abſolutely, or only for a certain time. Among theſe, that of the greateſt conſequence is the gravel or ſtone in the kidneys, which is known by the pain in the loins, vomiting, retraction of the teſticles, numbneſs of the thighs, and often by matter which the inflammation produces in the kidneys. Difference of age makes an extreme difference in danger, infants and young people almoſt always recovering; but ſtill the operation is adviſable in thoſe advanced in years, though it is not attended with near the ſame ſucceſs. Before the operation is performed it is proper to prepare the patient with a gentle purge the preceding day, and a clyſter early in the morning, which will be of great ſervice in cooling the body and making the operation leſs dangerous, where the rectum is liable to be wounded when full.

The moſt convenient time for the operation of lithotomy is ſpring or autumn, though when the patient is in exquiſite torment, or his life in danger, the preſent opportunity ſhould be embraced. Lithotomy is of two kinds: that made into the bladder is termed cyſtotomy; but when the ſtone is in the kidneys, which very rarely happens, the operation is termed nephrotomy.

With reſpect to the ſeveral methods of performing lithotomy for the ſtone in the bladder, they, according to Heiſter, are four: the firſt, and moſt ancient, is the apparatus minor, called likewiſe the Celſian or Guidonian method: the ſecond the apparatus magnus, or Marianus's method; the latter being termed the new, and the former the old method: the third is the apparatus altus, or the hypogaſtric ſection, wherein the inciſion is made at the lower part of the abdomen in the anterior ſide of the bladder, immediately above the os pubis; whereas in the reſt it is made in the perinæum, between the anus and the ſcrotum: the fourth, and the moſt modern method, was invented towards the end of the laſt century, and is termed the lateral operation. The firſt method is now entirely laid aſide, though Heiſter thinks it practicable on boys under fourteen: the wound of the bladder in this operation, ſays Sharpe, is made in the ſame place as is now practiſed in the lateral method; but its being impracticable on ſome ſubjects, and uncertain in all others, has made it to be univerſally exploded. Women are leſs ſubject to the ſtone in the bladder than men, and their urinary paſſages are more ſhort and lax, ſo that in general the ſtone being but ſmall, diſcharges itſelf with the urine, and when it happens to increaſe in the bladder, we have inſtances of its coming away ſpontaneouſly. Douglas propoſes to extract a ſmall ſtone in a woman, by dilating the urethra with a tent of gentian-root, or prepared ſponge; but when the ſtone is large, he approves of the high operation, diſtending the bladder with warm water, and compreſſing the urethra by an aſſiſtant's finger in the vagina, and then making an inciſion into the bladder immediately above the os pubis. This Heiſter ſays, is a very proper method, when the ſtone is very large, and the patient young and healthy; but Morand, when the ſtone is ſmall, prefers the apparatus major. Upon the whole, lithotomy appears to be a dangerous and precarious operation, nor can one method alone be depended on; but the ſurgeon muſt be determined in the choice, by the particular circumſtances of the caſe.

Nephrotomy, the ſecond ſpecies of lithotomy, is by moſt writers on the ſubject thought impracticable, who therefore abſolutely reject it; though we have many inſtances of perſons, who have been cured of wounds of the back penetrating to the kidneys. Heiſter mentions one cure of this kind performed by himſelf. Wounds, therefore, of the kidneys, eſpecially thoſe inflicted on the back, without penetrating into the cavity of the abdomen, he ſays, are often curable. Rouſet, Riolanus, and others, think nephrotomy may be practiſed with ſucceſs, if the opening is made where the ſtone is perceptible, and neither the emulgent artery, vein, nor ureter, wounded, nor the cavity of the abdomen penetrated. But beyond all diſpute it muſt be reaſonable, when nature points out the place by a tumor or abſceſs in the loins, preceding from a ſtone in the kidneys.

LITURGY, a name given to thoſe ſet forms of prayer which have been generally uſed in the Chriſtian church. Of theſe there are not a few aſcribed to the Apoſtles and Fathers. The liturgy of the church of England was compoſed in the year 1547, ſince which time it has undergone ſeveral alterations, the laſt of which was in the year 1661; and of this liturgy Dr. Comber gives the following character. "No church was ever bleſſed with ſo comprehenſive, ſo exact, and ſo inoffenſive a liturgy as ours; which is ſo judiciouſly contrived, that the whole may exerciſe at once their knowledge and devotion; and yet ſo plain, that the moſt ignorant may pray with underſtanding; ſo full, that nothing is omitted which ought to be aſked in public; and ſo particular, that it compriſeth moſt things which we would aſk in private; and yet ſo ſhort, as not to tire any that have true devotion. Its doctrine is pure and primitive; its ceremonies ſo few and innocent, that moſt of the Chriſtian world agree in them: its method is exact and natural, its language ſignificant and perſpicuous, moſt of the words and phraſes being taken out of the holy ſcripture, and the reſt are the expreſſions of the firſt and pureſt ages."—And in the opinion of the moſt impartial and excellent Grotius, (who was no member of, nor had any obligation to this church) "the Engliſh liturgy comes ſo near the primitive pattern, that none of the reformed churches can compare with it." Again, he ſays, "In the prayers a ſcholar can diſcern cloſe logic, pleaſing rhetoric, pure divinity, and the very marrow of the ancient doctrine and diſcipline; and yet all made ſo familiar, that the unlearned may ſafely ſay, Amen."

LITUUS, in Roman antiquity, a ſhort ſtraight rod, only bending a little at one end, uſed by the augurs. See *Augur*.

LIVER, *Hepar*, in anatomy, a large and pretty ſolid maſs of a dark red colour, a little inclined to yellow, ſituated immediately under the arch of the diaphragm, partly in the right hypochondrium, which it fills almoſt entirely, and partly in the epigaſtrium, between the appendix enſiformis and ſpina dorſi, and terminating commonly in the left hypochondrium, into which it ſometimes runs a conſiderable way. It is compoſed of ſeveral kinds of veſſels, the ramifications of which are multiplied in an aſtoniſhing manner and form, by the intertexture of their capillary extremities, an innumerable collection of ſmall, pulpy, friable corpuſcles, which are looked upon to be ſo many organs deſigned to ſeparate from the maſs of blood a particular fluid termed the bile.

LIVERY *of Seiſin*, in law, ſignifies delivering the poſſeſſion of lands, &c to him who has a right to them.

LIVERYMEN, of London, citizens who have taken up their livery in their reſpective companies: and they alone have the privilege of giving their votes for members of parliament, from which the reſt of the citizens are excluded.

LIVRE, a French money of account, containing twenty ſols.

* LIVY (Titus) a celebrated Latin hiſtorian, born of an illuſtrious family at Padua. On his going to Rome he acquired illuſtrious friends, and particularly obtained the eſteem of Auguſtus, who furniſhed him with memoirs for writing his Roman hiſtory. After that prince's death Livy returned to Padua, where he died on the ſame day with Ovid, in the year 21, and in the fourth year of the reign of Tiberius. Of all his works he acquired moſt reputation by his Roman hiſtory, which begins with the foundation of Rome, and ends with the death of Druſus in Germany. This hiſtory was divided into one hundred and forty books, of which there are only thirty-five remaining; but the excellence of theſe make the learned extremely regret the loſs of the others, and no pains have have been ſpared in order to recover them, yet all their reſearches have been to no purpoſe.

LIXIVIOUS, *Lixiviate*, in chemiſtry, ſuch ſalts as are extracted from the aſhes of burnt vegetables by means of lotion.

LIXIVIUM, a ley, or water impregnated with the ſalts of burnt vegetables. What is left after the evaporation of ſuch a liquor is called a lixivious ſalt.

Lixiviums are of great uſe in medicine, bleaching, ſugar-works, &c.

LIZARD, *Lacerta*, in zoology, a genus of amphibious animals, the body of which is oblong and rounded, the legs four, and the hinder part terminated by a tapering tail.

LOACH, the Engliſh name of a fiſh, called by Artedi, the ſmooth ſpotted cobitis, with a cylindrical body.

LOAD, among miners, denotes a vein of ore.

LOADSTONE, the ſame with magnet.

LOAMS, in natural hiſtory, are defined to be earths, compoſed of diſſimilar particles, hard, ſtiff, denſe, and hard and rough to the touch; not eaſily ductile while moiſt, readily diffuſible in water, and compoſed of ſand, and a tough viſcid clay. Of theſe loams, ſome are whitiſh, and others brown or yellow.

LOBE, in anatomy, denotes each of the two parts of which the lungs conſiſt. It is alſo applied to the diviſions of the liver.

LOCAL, in law, ſomething fixed to the freehold, or tied to a certain place: thus real actions are local, ſince they muſt be brought in the county where they lie; and local cuſtoms are thoſe peculiar to certain counties and places.

LOCAL PROBLEM, among mathematicians, ſuch a one as is capable of an infinite number of different ſolutions, becauſe the point which is to reſolve the problem may be indifferently taken within a certain extent, as ſuppoſe any where, within ſuch a line, within ſuch a plane figure, &c. which is called a geometric locus, and the problem is ſaid to be a local or indetermined one.

LOCHIA, in phyſic, the purgations of the uterus after child-birth. Theſe conſiſt, generally, for the two firſt days, of a kind of bloody ſeroſity, and gradually become more white, viſcous, and leſs in quantity; which, during the whole time, cannot be determined, ſome women having more, others leſs: nor can the duration of the flux be limited to any particular time. The lochia ſometimes flow in too large quantities, either on account of ſomething retained in the uterus, which prevents it from contracting duly; or a too great fluidity or agitation of the blood. If it proceed from a retention of ſomething in the uterus, this muſt, if poſſible, be taken away by the hand. But if it proceed from a too great fluidity or agitation of the blood, temperating decoctions of barley, jellies, emulſions, opiates, and aſtringents, are to be adminiſtered. But when a deficiency in the lochia, or their utter ſuppreſſion, happens, all poſſible means ſhould be uſed to procure this ſalutary diſcharge. For this purpoſe mild antiacids, diluters, and aperients, are to be exhibited. But great ſtreſs is to be laid on aperient and relaxing topics, clyſters, fomentations, plaſters, liniments, cupping on the inferior parts, peſſaries and ſuppoſitories. Boerhaave adviſes not to let blood in the above-mentioned diſorders, without the utmoſt neceſſity.

LOCK, a well-known inſtrument for ſecuring doors, cheſts, &c. and only to be opened by a key.

* LOCKE (JOHN) a great philoſopher, and one of the greateſt men England has produced, was born at Wrington, not far from Briſtol, on the 29th of Auguſt 1632. He ſtudied firſt at Weſtminſter-ſchool, whence he removed to Chriſt-church in Oxford, and there diſcovered ſuch a genius for the ſciences, that he ſoon paſſed for one of the moſt judicious critics of his time: he was, however, highly diſguſted at the method of ſtudy then purſued in the univerſity, there being nothing taught there but the Ariſtotelian philoſophy, embarraſſed with obſcure terms and uſeleſs queſtions. He diſapproved alſo of the formal diſputes held in the ſchools, which he thought only ſerved to produce or nouriſh prejudices and oſtentation The firſt books which gave him a reliſh for the ſtudy of philoſophy were thoſe of Des Cartes; for though he afterwards followed opinions contrary to thoſe of that philoſopher, yet he admired him for his perſpicuity. Mr. Locke alſo applied himſelf to the ſtudy of phyſic, in which the learned Sydenham allows that he made a very great progreſs; but he never took upon himſelf that profeſſion. In 1664 he went to Germany, was ſecretary to Sir William Swan, envoy from the Engliſh court to the elector of Brandenburgh, but in leſs than a year returned to England, where he applied himſelf to the ſtudy of natural philoſophy at Oxford, and there became acquainted with the lord Aſhley, afterwards earl of Shafteſbury, who introduced him into the converſation of the moſt learned men of that time, with whom he contracted a ſtrict friendſhip, which laſted as long as his life. In 1668 he attended the earl and counteſs of Northumberland into France. At his return to England he lived with the lord Aſhley, as he had done before, and took upon himſelf the care of his ſon s education. That nobleman being made lord

chancellor of England in 1672, appointed him ſecretary of the preſentations, which place he held till the end of 1673, when the earl reſigned the great ſeal. Mr. Locke was the ſame year made ſecretary to a commiſſion of trade; but that commiſſion being diſſolved in December 1674, and finding himſelf threatened with a conſumption, he went the next year to Montpellier, where he ſtaid a conſiderable time, and there became acquainted with the lord Herbert, earl of Pembroke. Some time after, the earl of Shafteſbury being retired to Holland, Mr. Locke went to him there, and contracted an intimate friendſhip with Limborch, Le Clerc, and other learned men. He was then accuſed at court of having compoſed certain tracts againſt the government, printed in Holland, on which his place of ſtudent of Chriſt-church was taken from him by a ſpecial order from king Charles II. but theſe tracts were afterwards diſcovered to be written by another perſon. After the death of king Charles II. Mr. William Penn offered his intereſt to procure a pardon for him from king James II. but Mr. Locke ſaid he had no need of a pardon, ſince he had not been guilty of any crime. In 1687 the Engliſh envoy at the Hague demanded him and eighty-three other perſons to be delivered up by the States General, for being concerned in the Duke of Monmouth's rebellion, though he held no correſpondence with him. This obliged Mr. Locke to keep himſelf concealed for ſeveral months, till his innocence being known, he again appeared in public. In 1680 he returned to England in the fleet which convoyed the princeſs of Orange. He might then have eaſily obtained a very conſiderable poſt; but he contented himſelf with being one of the commiſſioners of appeals, worth 200 l. per annum. About the ſame year he was offered to go abroad as envoy to the emperor, or any other court where the air would be moſt ſuitable to him, but he waved it on account of his ill ſtate of health. In 1695 he was appointed one of the commiſſioners of trade and plantations, a place worth 1000 l. per annum, which he diſcharged with great ſucceſs till the year 1700, when he reſigned on account of his aſthmatic diſorder. After he had reſigned his commiſſion, he lived at Oates in Eſſex, a country ſeat of Sir Francis Maſham's, where he ſpent the remainder of his life in the ſtudy of the ſcriptures, and died there the 28th of October 1704, in the 73d year of his age. His writings will render his name immortal. The principal of theſe are, 1. His eſſay on the human underſtanding. 2. Thoughts on education. 3. Two treatiſes on government. 4. The reaſonableneſs of Chriſtianity. 5. A paraphraſe and notes on the epiſtles of St. Paul, &c.

LOCUS GEOMETRICUS, in geometry, denotes a line, by any point of which a local or indeterminate problem is ſolved.

If a right line ſuffice for the conſtruction of the equation, it is called locus ad rectam; if a circle, locus ad circulum; and theſe were called plain loci: if a parabola, hyperbola, locus ad parabolam, hyperbolam, &c. And theſe were called ſolid loci.

Wolfius and the moderns more commodiouſly divide loci into orders, according to the number of dimenſions to which the indeterminate quantities riſe.

LOCUST, *Locuſta*, a genus of inſects, comprehending the locuſt, ſimply ſo called, the ſeveral ſpecies of other locuſts and graſhoppers, with the crickets of the houſe and field. Willoughby obſerves, that in theſe animals there are always more males than females, which is contrary to the order of nature in other inſects, where the females are much the moſt numerous: and Swammerdam obſerves, that it is only the males that make a noiſe, which he ſays they do by a ſwift vibration of their wings, either againſt one another, or againſt their legs.

The nympha, or worm of the locuſt, ſcarce at all differs from the creature in its perfect ſtate. It moves and eats in the nymph ſtate, and all the viſible difference is, that the wings are not expanded as in the perfect locuſt, but are gathered up in a ſmall compaſs, and form four little buttons on the ſhoulders. It is obſerved, that towards the end of ſummer the males are very tender of the females, three or four of them being frequently ſeen gathered about one of that ſex, and ſeeming to do her all the kind offices in their power, fluttering about with their wings, and rubbing her with their fore legs. The males are always more briſk and nimble than the females; and, amongſt all the kinds of locuſts, there are a great many naturally imperfect; particularly many have only one hinder leg, yet theſe hop almoſt as well as the reſt. The country of the Coſſacks or Ukraine is, in dry ſummers, much infeſted with ſwarms of locuſts driven thither by an eaſt or ſouth-eaſt wind. The number of theſe inſects is ſo great, that they darken the air, and devour all the corn of the country. They lay their eggs in autumn, and then die. It is ſaid that each of theſe creatures lays two or three hundred eggs, which hatching the enſuing ſpring, produce ſuch a number of locuſts, that they do far more miſchief than before, unleſs the rains fall, which kill both the eggs and the inſects, or unleſs a ſtrong north or north-weſt wind ariſes, which drives all into the Euxine ſea. The hogs of the country are fond of theſe eggs, and devour great quantities of them. In the night, when theſe inſects reſt on the ground, they cover it to the height of three or four inches. If a wheel paſſes over them, they emit an intolerable ſtench. *Phil. Tranſ.* No. 8.

Water LOCUST, *Locuſta Aquatica*, the name given by authors to a ſpecies of water inſect, ſomewhat reſembling the locuſt kind in ſhape.

LOCUSTÆ, in botany, the tender extremities of the branches of trees, ſuch as, it is ſuppoſed, St. John the Baptiſt fed on in the wilderneſs.

LODGMENT, in military affairs, a work raiſed with earth, gabions, faſcines, wool-packs, or mantelets, to cover the beſiegers from the enemy's fire, and to prevent their loſing a place which they have gained, and are reſolved, if poſſible, to keep.

LOG, in naval affairs, a ſmall triangular piece of board uſed on board a ſhip; into one end of which a convenient quantity of lead is caſt, to make it ſwim upright, the other end being faſtened to the log-line.

LOG-LINE, a line faſtened to one end of the log, and wound upon a reel.

This line is generally divided into certain ſpaces, which are, or ought at leaſt to be, ſuch a proportional part of a nautical mile, ſixty of which make a degree of a great circle, as half a minute, the time allowed for the experiment, is of an hour. Now a common nautical or ſea mile, according to an experiment made by Mr. Richard Norwood, and with which the French nearly agree, is = 6120 Engliſh feet, which being divided by 120, the half minutes in an hour, gives fifty-one feet for the diſtance between each diviſion on the log-line. Theſe diviſions or ſpaces are called knots, becauſe at the end of each diviſion there is a piece of twine with knots in it reefed between the ſtands of the line, whereby the number of diviſions or knots run off the reel, during the half minute, are readily counted. And becauſe it is requiſite that the log be out of the eddy of the ſhip's wake before they begin to count, therefore theſe knots or ſpaces begin at the diſtance of ten fathoms or ſixty feet from the log, at which point, for the more ready diſcovering it, there is faſtened a piece of red rag. The log-line being thus prepared and wound upon a reel, heave the log over board from the poop, and as ſoon as the log is out of the ſhip's eddy, or the red rag at your hand, let your aſſiſtant turn the half minute glaſs; then veer the line from off the reel, which eaſily turns as the ſhip ſails from the log, till the half-minute glaſs is run out, at which time ſtop the line, and the number of knots intercepted between your hand and the red rag, will ſhew how far the ſhip has run in that time, and, conſequently, her rate of ſailing. For ſince the diſtance comprehended between each knot bears the ſame proportion to a nautical mile as half a minute does to an hour, therefore as many knots as are run out in half a minute, ſo many miles will a ſhip ſail in an hour, ſuppoſing her to move with the ſame velocity during that time. But as many accidents attend a ſhip during a day's ſailing, ſuch as the variableneſs of winds, the different quantity of ſail carried, &c. it will be neceſſary to have the log at every alteration; but if none of theſe alterations be perceptible, yet it ought to be conſtantly heaved, at leaſt every hour. As the log-line is apt to ſtretch and ſhrink, and the half-minute glaſs to alter, they ought to be often examined, and when found amiſs, rectified. The generality of our ſeamen, upon a ſuppoſition that ſixty Engliſh miles are equal to a degree of a great circle, make the diſtance between knot and knot but forty feet: but as this ſuppoſition is evidently falſe, it were greatly to be wiſhed that they would conſtantly uſe the former limitation, being in every reſpect as eaſy, and much more ſure and certain; and the rather, as they are at the ſame time obliged by experience to ſhorten the half-minute glaſs nearly four ſeconds, which is nothing leſs than correcting one blunder by another.

LOG-BOARD, a table generally divided into five columns, in the firſt of which is entered the hour of the day; in the ſecond, the courſe ſteered; in the third, the number of knots ran off the reel each time of heaving the log; in the fourth, from what point the wind blows, and in the fifth, obſervations on the weather, variation of the compaſs, &c.

LOG-BOOK, a book ruled in columns, like the log-board, into which the account on the log-board is tranſcribed every day at noon; from whence, after it is corrected, &c. it is entered into the journal.

LOG-WOOD, or Campeachy wood, the wood of a low prickly tree, which grows plentifully about Campeachy on the bay of Honduras. Log-wood gives out its colour both to watery and ſpirituous menſtrua, but not readily to either: it requires to be raſped and ground into fine powder, and boiled in ſeveral freſh parcels of the liquors. Rectified ſpirit extracts the colour more eaſily, and from a larger proportion of the wood than water does. The tinctures both in water and in ſpirit are of a fine red, with an admixture, particularly in the watery one, of a violet or purple. Volatile alkaline ſalts or ſpirits incline the colour more to purple: the vegetable and nitrous acids render it pale; the vitriolic and marine acids deepen it. The watery decoction, wrote with on paper, loſes its redneſs in a few days, and becomes wholly violet. This colour communicates alſo to woollen cloth previouſly prepared by boiling with a ſolution of alum and tartar: the dye is beautiful, but very periſhable. It is often uſed by the dyers, as an ingredient in compound colours, for procuring certain ſhades which are not eaſily hit by other materials. With chalybeate ſolutions, it ſtrikes a black. Hence it is employed in conjunction with thoſe liquors, for ſtaining wood black for picture-frames, &c. and with the addition of galls, for dyeing cloth and hats black. The black dyes, in which this wood is an ingredient. have a particular luſtre and ſoftneſs, far beyond thoſe made with galls and vitriol alone: the beauty, however, which it here imparts, is not permanent, any more than its own natural violet dye. On the ſame principle, it improves alſo the luſtre and blackneſs of writing ink. Ink made with vitriol and galls, does not attain to its full blackneſs till after it has lain ſome time upon the paper: a due addition of logwood renders it of a deep black as it flows from the pen, eſpecially when vinegar or white wine is uſed for the menſtruum.

LOGARITHMIC *Curve*, a curve which explains the nature and property of logarithms, and is delineated in the following manner:

Upon the line A G (plate XXIX. fig. 3.) infinitely extended each way, let there be taken A B, B C, C D, D E, E F, &c. towards the right hand; alſo A O, O P, &c. towards the left, all equal among themſelves; and from the ſeveral points P, O, A, B, C, D, E, F, &c. let there be drawn the lines R P, O Q, A H, B I, C K, D L, E M, F N, &c. equal in length to the ſeveral lines, in the geometrical ſcale of proportional lines, infinite in number; theſe therefore will repreſent ſo many terms in the progreſſional of proportionals, of which the line A H repreſents unity. Now if the extremities, R, Q, H, I, K, L, M, N, &c. of the geometrical ſcale of mean proportionals be connected together by right-lines, the figure P R N F will be a polygon, conſiſting of more or fewer ſides, according as the terms in the ſcales of mean proportionals are more or fewer in number.

If the diſtances A B, B C, D E, E F, &c. are biſected in the points *b*, *c*, *d*, *e*, *f*, &c. and from theſe points be drawn lines, as *b i*, *c k*, *d l*, *e m*, *f n*, &c. perpendicular to A G, which will be ſo many proportionals between A H, B I, C K, D L, E M, F N, &c. there will ariſe a new ſcale for a ſeries of proportionals between A H, B I, C K, D L, E M, F N, &c. double in number to thoſe of the former ſcale. And if the extremities H, *i*, I, *k*, K, *l*, L, &c. be connected together by right-lines, we ſhall have a new polygon, conſiſting of a greater number of ſides; but each ſide is leſs in magnitude.

After the ſame manner, if the diſtance between every two terms be continually biſected, and to each of the points, ſo found, there be applied a ſeries of mean proportionals, the number of terms in this new ſcale, as alſo the ſides of the polygon, will by this means become infinite; and each ſide of the polygon will be leſs than any given right-line, and conſequently the polygon will be changed into a curve-lined figure; ſince every curvilinear figure may be conſidered as a polygon of an infinite number of ſides. The curve thus deſcribed is called the logarithmic curve, in which if the right-lines A H, B I, &c. which ſtand at right-angles to the axis A G, repreſent ſo many terms in a ſeries of numbers in geometrical progreſſion, the portions of the axis A B, B G, &c. between the place of

unity

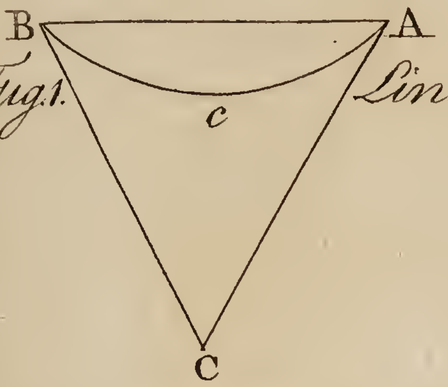


Fig. 1. Line

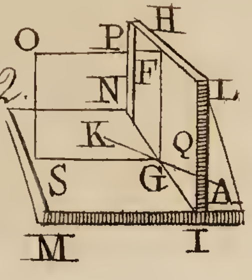


Fig. 2. Line.

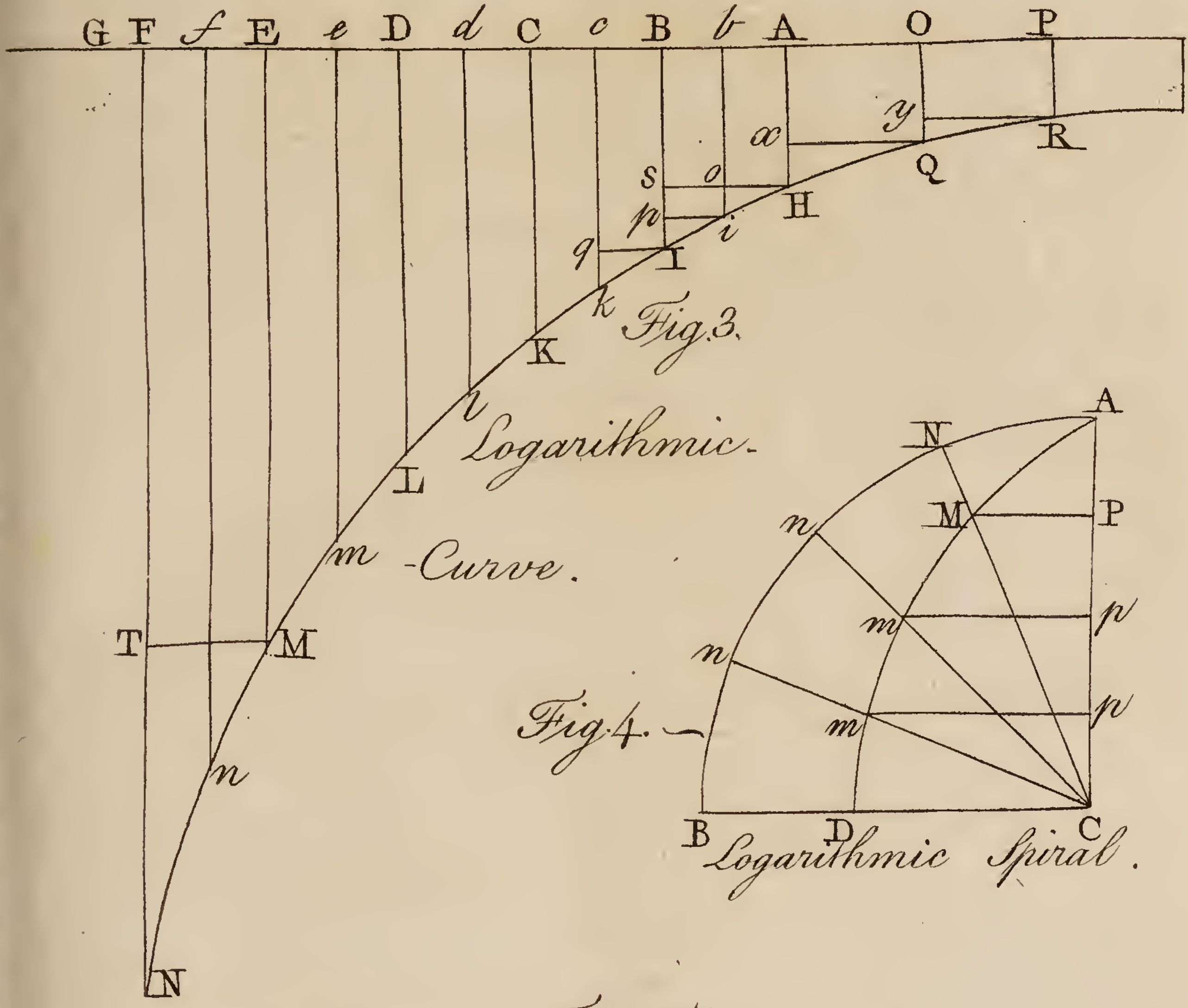


Fig. 3. Logarithmic-Curve.

Fig. 4. Logarithmic Spiral.

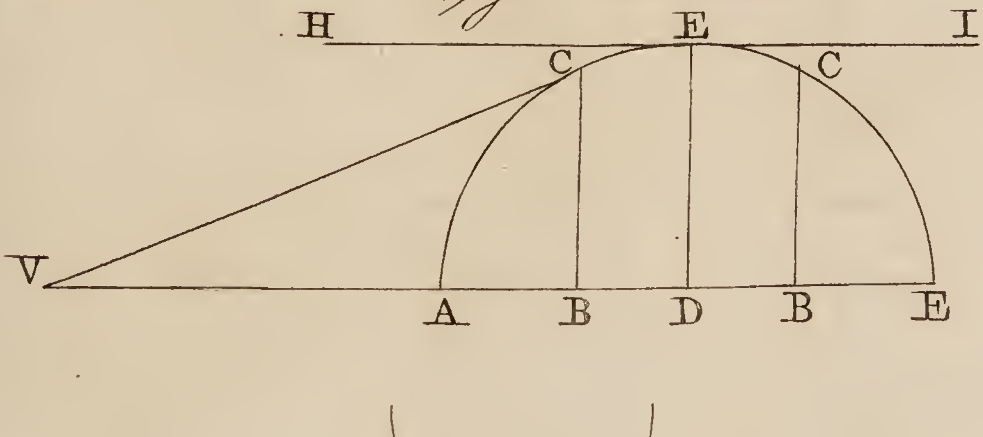


Fig. 5. Maximum.

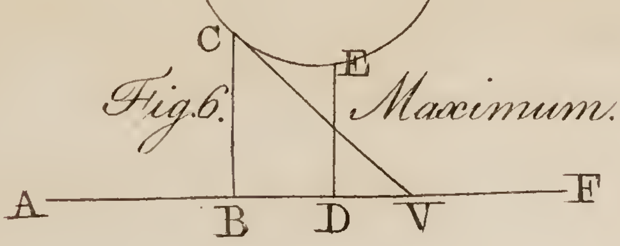


Fig. 6. Maximum.

unity and any given term, will ſhew the place or order that each number in the ſcale of geometrical proportionals obtains from the place of unity in the ſame ſeries.

The diſtance therefore between any two numbers, in this continued ſcale of geometrical proportionals, is the logarithm of the ratio of theſe two numbers the one to the other. See *Logarithms*.

LOGARITHMIC *Spiral.* If the quadrant of a circle A N B (plate XXIX. fig. 4.) be divided into any number of equal parts, in the points N, *n*, *n*, &c. and from the radii C N, C *n*, C *n*, &c. be cut off C M, C *m*, C *m*, &c. continual proportionals, the points M, *m*, *m*, *m*, will be in the logarithmic ſpiral. And there may be imagined an infinite number of different curves of this kind.

LOGARITHMS, a ſet of artificial numbers, whereby the common operations in multiplication and diviſion are, performed by addition and ſubtraction; raiſing powers and extracting roots, are, by the help of theſe numbers, eaſily performed by multiplication and diviſion.

Logarithms, juſtly eſteemed one of the greateſt and moſt uſeful diſcoveries that the laſt century has produced, were firſt invented by John Neper, baron of Marchiſton, in Scotland, and by him firſt publiſhed at Edinburgh, in the year 1614, and ſo on after by himſelf, and Mr. Briggs, (then Savilian profeſſor of geometry in the univerſity of Oxford) reduced into a better form, and publiſhed in London in the year 1624, in the ſame form and manner as they are uſed at this day.

Logarithms may be conſidered as, and are uſually defined to be, a ſeries or rank of numbers in an arithmetical progreſſion, fitted or adapted to the exponents of a ſeries of numbers in a geometrical progreſſion.

If between 1 and x be inſerted a mean proportional, which is $\sqrt{x}$ or $x^{\frac{1}{2}}$, its index $\frac{1}{2}$ ſhews that its diſtance from unity will be but one half of the diſtance of x from unity. In like manner, if between x and x we inſert a mean proportional, its index will be 1 and $\frac{1}{2}$ or $\frac{3}{2}$, inaſmuch as its diſtance from unity is once and a half the diſtance of x from the ſame place of unity.

Again, if between 1 and x be inſerted two mean proportionals, the firſt of theſe will be the cube-root of x or $\sqrt[3]{x}$, and its index will be $\frac{1}{3}$, inaſmuch as its diſtance from the units place is but $\frac{1}{3}$ of the diſtance of x, from the ſame place of unity; and conſequently $\sqrt[3]{x}$ is expreſſed by $x^{\frac{1}{3}}$, whence it follows that the index of unity is 0, inaſmuch as unity cannot be removed at any diſtance from itſelf.

And the ſame ſeries of geometrical proportionals may be continued on the contrary ſide of unity, or towards the left hand, and which therefore will decreaſe in the ſame manner, or in the ſame ratio, as the terms placed on the right hand increaſe.

For the terms $\frac{1}{x^5}$, $\frac{1}{x^4}$, $\frac{1}{x^3}$, $\frac{1}{x^2}$, $\frac{1}{x}$, 1, x, x^2, x^3, x^4, x^5, &c. are in the ſame geometrical progreſſion continued, and have all the ſame common ratio; wherefore, inaſmuch as the diſtance of x from unity towards the right hand is poſitive, or $+1$, the diſtance of $\frac{1}{x}$ from unity towards the left hand, which is equal to the former, is negative or -1, which is therefore the index of $\frac{1}{x}$, and conſequently for $\frac{1}{x}$ may be written x^{-1}.

Again, inaſmuch as x^2 is on the right ſide of unity, and poſitive, and its index $+2$, the index of $\frac{1}{x^2}$, which is as far diſtant from unity on the contrary ſide, or towards the left hand, will be negative, and -2, and conſequently $\frac{1}{x^2}$ is the ſame with x^{-2}: In like manner x^{-3} is the ſame with $\frac{1}{x^3}$, and x^{-4} ſame with $\frac{1}{x^4}$; whence it comes to paſs that the negative indices ſhew that the terms to which they belong, are as far diſtant from unity toward the left hand, as the terms whoſe indices are the ſame and poſitive, are removed from unity on the contrary ſide, or towards the right hand.

Again, as between 1 and x, in the ſeries increaſing from or on the right hand of unity, may be inſerted a mean proportional as $\sqrt{x}$, and between this mean proportional and unity be inſerted another mean proportional as $\sqrt[4]{x}$, and between the laſt mean proportional and unity be inſerted another mean proportional as $\sqrt[8]{x}$, &c. whoſe reſpective indices will be $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, &c. ſo between unity and the next term $\frac{1}{x}$ in the ſeries de-

decreaſing from unity, or on the left hand of unity, may be inſerted a mean proportional as $\frac{1}{\sqrt{x}}$, whoſe correſpondent index will be $-\frac{1}{2}$: and, again, between this mean proportional and unity, may another mean proportional, as $\frac{1}{\sqrt[4]{x}}$, be inſerted, whoſe correſpondent index will be $-\frac{1}{4}$, and between this and unity may another mean proportional be inſerted; the index will be $-\frac{1}{8}$, &c. and as this may be done between any other two terms of the progreſſion, it follows, that between any two terms may an infinite number of mean proportionals be inſerted, whoſe reſpective indices will become the logarithms of the reſpective terms to which they belong: and theſe mean proportionals, the greater they are in number between the two terms of any ratio, the nearer do they approach to a ratio of equality, with their correſpondent indices or exponents.

Hence we are let into the reaſon of the ancient way of making logarithms, and which was made uſe of by their firſt inventors, and that was by a continual extraction of the ſquare root. In order to this, they firſt extracted the ſquare of 10, and having continued that root to a very great number of places, they extracted the ſquare-root again, and ſo on continually until they at laſt, after 54 ſuch extractions, obtained the number 1,0000000000000001278191493200323442. Now if this number be firſt ſquared, then cubed, then raiſed to the fourth, fifth, &c. power, it is very certain that, as their increaſe in the ſeveral products ariſe but by ſlow degrees, there will among them be found ſuch as are extremely near in value to the natural numbers 2, 3, 4, 5, &c. and conſequently, by what has been already ſaid concerning the nature of logarithms, thoſe of the natural numbers 2, 3, 4, 5, &c. will be expounded by the exponents, or number of multiplications, which formed the products reſpectively equal (or nearly ſo) to the natural numbers 2, 3, 4, 5, 6, &c. Here we ſee the reaſon why the logarithm of 1 is 0, or rather, that 1 has no logarithm, becauſe the quantity to be continually involved muſt be a ſmall matter greater than 1; for if it be leſs, the powers will decreaſe it.

If logarithms are to be made only to ſeven places of figures, which are ſufficient for common uſe, twenty-five ſucceſſive extractions will do for that purpoſe; that is, we need only extract the 33554432 (or 2 raiſed to the 25th power) root of 10; becauſe in that root there will be found ſeven cyphers before the firſt ſignificant figure after the unit; and in the courſe of theſe extractions, the denominators of the fractions expounding thoſe roots which are neareſt in value to any of the natural numbers 2, 3, 4, 5, &c. will point out their reſpective logarithms.

Some have conſidered the logarithm of a number as the logarithm of the ratio of unity to that number itſelf, or as the diſtance between unity and that number in a geometrical ſcale of proportionals, and conſequently meaſured by the number of proportionals contained between them: logarithms therefore expound the place or order that every number obtains from the unit's place in a continued ſeries or ſcale of proportionals indefinite in number.

Thus, if between unity and the number 10, there be ſuppoſed 10000000, &c. mean proportionals, that is, if the number 10 be placed in the 10000000th place from unity, between 1 and 2, there will be found 3010300 of ſuch proportionals; that is, the number 2 will be placed in the 3010300th place from unity; between 1 and 3 there will be found 4771213 of the ſame proportionals, or the number 3 will ſtand in the 4771213th place in the indefinite ſcale of proportionals; their numbers 10000000, 3010300, & 4771213, are therefore the logarithms of 10, 2, and 3; or, more properly, the logarithms of the ratios of thoſe numbers one to the other.

Again, if between unity and the number 10, there be ſuppoſed an indefinite ſcale of mean proportionals, whoſe number is 23025851; that is, if the number 10 be placed in the 23025851ſt place from unity, in the indefinite ſcale of proportionals, between 1 and 2, there will be found to be 6931471 ſuch mean proportionals; and between 1 and 3, there will be found 10986122 of the ſame proportionals: ſo that if the firſt term of the ſeries be called x, the ſecond term will be x^2, the third x^3, &c. and if the number 10 be ſuppoſed to be the 10000000th term in the ſeries, the number 2 will be the 3010300th term, and the number 3 will be the 4771213th term in the ſame ſeries; and conſequently $x^{1000000}=10$, $x^{3010300}=2$, and $x^{4771213}=3$, &c. and again, if the number 10 be ſuppoſed the 2302585Iſt term in the ſeries, the number 2 will be the 693147Iſt term, and the number 3 the 10986122d term in the ſame ſeries; and conſequently, in this caſe, $x^{2302585I} = 10$, $x^{693147I} = 2$, and $x^{10986122} = 3$, &c.

And as the indefinite number of mean proportionals between any two numbers may be aſſumed at pleaſure, hence logarithms may be of as many different forms (that is, there may be as many different ſcales of logarithms) as there can be aſſumed different ſcales of mean proportionals between any two numbers. Every number therefore is ſome certain power of that number which is placed next to unity in the indefinite ſcale of proportionals between unity and the given number, and the index of that power is the logarithm of the number.

Logarithms therefore may be of as many ſorts as you can aſſume different indices of the power of that number whoſe logarithm is required.

But ſince fluxions and the higher geometry have been ſo well underſtood, mathematicians have directed their views towards facilitating thoſe laborious and operoſe calculations formerly made uſe of for conſtructing tables of logarithms, by help of converging ſeries, and other means, whereby the logarithms of any propoſed numbers may now be obtained with very little trouble: an example of this kind may be ſeen in Maclaurin's Fluxions, p. 678, vol. ii. where that celebrated mathematician ſhews that, the logarithm of m being given, the logarithm of $\overline{m+z}$ — log. m is equal to $\frac{2z}{2m+z}$ multiplied by the ſeries $1 - \frac{z}{12} \times \overline{\frac{1}{m+z} - \frac{1}{m}} + \frac{z^3}{360} \times \overline{\frac{1}{\overline{m+z}^3} - \frac{1}{m^3}} - \frac{z^5}{1260} \times \overline{\frac{1}{\overline{m+z}^3} - \frac{1}{m^3}} + \&c.$ This ſeries converges ſo very ſwift, that two or three terms are ſufficient in almoſt any caſe whatſoever.

The indices, or characteriſtics of logarithms, correſpond to the denominative part of the natural numbers, as the other member of the logarithm does to the denominative part of the number: that is, the index ſhews the denomination, or place of the laſt (or left hand) figure of the number, and conſequently of all the reſt.—Thus 0, affixed to a logarithm, denotes the laſt figure of the number to which the logarithm anſwers, to be nothing diſtant from (i. e. in) the place of units. The index 1 ſhews the laſt figure of its number to be diſtant 1 place from the place of units, i. e. to be in the place of tens, and conſequently the number itſelf to be either 10, or ſome number between that and 100, and ſo of the other indices.—Hence all numbers which have the ſame denomination, but not the ſame numerative parts, are all numbers from 1 to 10, from 10 to 1000, &c. and will have logarithms whoſe indices are the ſame, but the other members different. Again, all numbers which have the ſame numerative, but not the ſame denominative part, will have different indices, but the reſt of the logarithms the ſame. If a number be purely decimal, to its logarithm is affixed a negative index, ſhewing the diſtance of its firſt real figure, from the place of units. Thus the logarithm of the decimal ,256 is $\overline{1}$,43824; of the decimal ,0256 is $\overline{2}$,30824, &c.

To find the logarithm for a number greater than any in the common tables, but leſs than 10000000—Cut off four figures on the left hand of the given number, and ſeek the logarithm in the table; add as many units to the index as there are figures remaining on the right; ſubtract the logarithm found from the next following it in the table; then, as the difference of numbers in the canon is to the tabular difference of the logarithms anſwering to them, ſo are the remaining figures of the given number to the logarithmic difference; which if it be added to the logarithm before found, the ſum will be the logarithm required. Suppoſe the logarithm of the number 92375 were required. Cut off the four figures 9237, and to the characteriſtic of the logarithm correſponding to them add an unit; then

From the logarith. of the
number - - - 9238=3,9655780
Subtract logarithm. number - - 9237=3,9655309
Remains tabular difference 471
10—471—5
5) 2 — — 1
235
Now to the logarithm — 4,9655309
Add the difference found - 235
The ſum is the logarithm
required - - - 4,9655544

To find the logarithm of a proper fraction.—Subtract the logarithm of the numerator from that of the denominator, and to the remainder prefix the ſign of ſubtraction.—Thus ſuppoſe it were required to find the logarithm of $\frac{3}{7}$,

Logarithm of 7=0,8450980
Logarithm of 3=0,4771213
Logarithm of $\frac{3}{7}$=0,3679767

To find the number correſponding to a logarithm greater than any in the table. Firſt, from the given logarithm ſubtract the logarithm of 10, or 100, or 1000, or 10000, till you have a logarithm that will come within the compaſs of the table; find the number correſponding to this, and multiply it by 10, or 100, or 1000, or 10000, the product is the number required. Suppoſe, for inſtance, the number correſponding to the logarithm 7,7589982 be required, ſubtract the logarithm of the number 10000, which is 4,0000000, from 7,589982; the remainder is 3,7589982, the number correſponding to which is 5741,1, which multiplied by 10000, gives 57411000, the number required.

To find the number correſponding to a negative logarithm.—To the given negative logarithm, add the laſt logarithm of the table, or that of the number 10000 i. e. ſubtract the firſt from the ſecond, and find the number correſponding to the remainder; this will be the numerator of the fraction, whoſe denominator will be 10000. Suppoſe it be required to find the fraction correſponding to the negative logarithm 0,3679767, ſubtract this from - - 4,0000000

the remainder is 3,6320233, the number correſponding to which is 4285 $\frac{71}{100}$; the fraction ſought therefore is $\frac{4285}{10000000}$. The reaſon of the rule is, that as a fraction is the quotient, ariſing from the diviſion of the numerator by the denominator, unity will be to the fraction, as the denominator to the numerator; but as unity is to the fraction correſponding to the given negative logarithm, ſo is 10000 to the number correſponding to the remainder: therefore if 10000 be taken for the denominator, the number will be the numeraror of the fraction required.

To find a fourth proportional to three given numbers, add the logarithm of the ſecond to that of the third, and from the ſum ſubtract the logarithm of the firſt: the remainder is the logarithm of the fourth required. Let the given numbers be 4, 68, and 3.

Logarithm - 68=1,8325089
Logarithm - 3=0,4771213
Sum - - =2,3096302
Logarithm - 4=0,6020600
Logarithm required 1,7075732

The number in the tables correſponding to which is 51.

LOGIC, λογικη, the art of thinking and reaſoning juſtly; or, it may be defined, the ſcience or hiſtory of the human mind, inaſmuch as it traces the progreſs of our knowledge from our firſt and moſt ſimple ideas through all their different combinations, conceptions, and all thoſe numerous deductions that reſult from variouſly comparing them one with another. See the articles IDEA and KNOWLEDGE.

The preciſe buſineſs of logic, therefore, is to explain the nature of the human mind, and the proper manner of conducting its ſeveral powers, in order to the attainment of truth and knowledge. It lays open thoſe errors and miſtakes we are apt, through inattention, to run into; and teaches us how to diſtinguiſh between truth, and what only carries the appearance of it. By this means we grow acquainted with the nature and force of the underſtanding; ſee what things lie within its reach; where we may attain certainty and demonſtration; and when we muſt be contented with probability.

Theſe conſiderations ſufficiently evince the uſefulneſs of this ſcience, which is divided into four parts, according to the number of the operations of the mind in its ſearch after knowledge, viz. perception, judgment, reaſoning, and method. See the articles *Perception*, &c.

This valuable art of ranging our ideas, connecting them cloſely together, and conſequently of facilitating the tranſition from one to another, ſupplies us with a means of rendering all men's abilities nearly equal. In fact, all our knowledge is reducible to primitive ſenſations, which is nearly alike in all men. The art of combining and connecting our direct ideas only gives them a more or leſs exact arrangement and denomination; whence they become more or leſs ſenſible to others. A man who readily combines his ideas, differs but little from him who combines them ſlowly; as he who judges of a picture at ſight differs but little from him who requires to be made ſenſible of all its parts: both at the firſt glance have the ſame ſenſations, though they ſink not ſo deep in the ſecond, who therefore dwells longer upon each, to render them ſtrong and diſtinct; and by this means the reflex ideas of the firſt obſerver become as eaſy to the ſecond as direct ones. And hence, perhaps, there is ſcarce an art or ſcience that may not, by means of a well-adapted logic, be taught to a ſlow underſtanding; becauſe there are few arts or ſciences whoſe precepts or rules may not be reduced to ſimple notions, and diſpoſed in ſo connected an order, that the chain need never be broken. As the mind is more or leſs ſlow in its operations, it requires more or leſs of this connected order. The advantage of a genius is that of having leſs occaſion for it; or rather, of being able to form it quick and almoſt imperceptibly. See *Demonſtration*.

LOINS, *Lumbi*, in anatomy, the two lateral parts of the umbilical region of the abdomen.

LOLIUM, darnel, in botany, a genus of plants, the ſeed of which is reckoned attenuant, abſtergent, drying, and heating.

LONCHITIS, ſpleenwort, in botany, a genus of plants the leaves of which are of uſe in healing wounds, and in preventing inflammations of them; they are alſo uſed againſt the ſpleen: the root is aperient and diuretic.

* LONDON, a city and county of itſelf, in Middleſex, the ſee of a biſhop, the metropolis of Great Britain, and of all the Britiſh dominions. It is the royal reſidence, and is ſituated chiefly on the north bank of the river Thames; part of it, namely, the borough of Southwark, a dependency of the city of London, being in Surry, and on the ſouth banks of that river. Whence its name is derived is not eaſily determined, though there are various conjectures about it: we only know that it was a remarkable place in the time of the Romans; for Tacitus, who lived in the reign of Domitian, ſays, that London was a town very famous for trade; and Ammianus Marcellinus calls it an old town; and that later ages, after it became a Roman town, called it Auguſta. Within the city-walls, and its ancient bars and gates, it takes in but a narrow compaſs; but if in the general acceptation of London we take in all that vaſt maſs of buildings, reaching from Blackwall in the E. to Tothill-fields in the W. from London bridge, or river, S. to Iſlington, N. and from Peterborough-houſe, on the Bank-ſide at Weſtminſter, to Cavendiſh-ſquare, and even to Marybone, and all the new buildings by and beyond Groſvenor and Hanover ſquares, to the Brentford-road one way, to the Acton road another; a prodigy all this, of ſuch buildings as nothing in the world does, or ever did ſurpaſs, except it was old Rome in Trajan's time, when the walls of that city were fifty miles in circuit, and the number of its inhabitants 6,800,000. It had ſeven gates by land, namely, Ludgate, Aldgate, Cripplegate, Newgate, Alderſgate, Moorgate, and Biſhopſgate; of which the three firſt were taken down in September 1760. On the ſide of the water there were Dowgate and Billingſgate, long ſince demoliſhed, as well as the Poſtern-gate near the Tower, and the greateſt part of the walls. In the year 1670 there was a gate erected, called Temple-bar, which determined the bounds of the city weſtward. This city has undergone great calamities of various kinds; but the two laſt were moſt remarkable, that is, the plague in 1665, which ſwept away 68,596 perſons; and the fire in 1666, which burnt down 13,200 dwelling-houſes; in memory of this laſt there is a column erected, called the Monument, near the place where it began, which is one of the moſt remarkable ſtructures in the city. The figure of London is very irregular, being ſtretched out in building at the pleaſure of every one, for conveniency of trade, or otherwiſe; whereas Rome was round, with very few irregularities. Its form, however, including the city of Weſtminſter and borough of Southwark, is nearly oblong, being about five miles in length from W. to E. if meaſured in a direct line from Hyde-park-corner to the end of Limehouſe, and upwards of ſix, if the ſtreets be followed; or from Limehouſe to the end of Tothill-ſtreet in Weſtminſter, ſeven miles and a half. London, including the buildings on both ſides the water, is in ſome places three miles broad from S. to N. as from St. George's in Southwark to Shoreditch in Middleſex; or two miles, as from Peterborough-houſe to Montague-houſe in Great Ruſſel-ſtreet; and in ſome places not half a mile, as in Wapping; and leſs in Rotherhithe. Several villages, formerly ſtanding at a great diſtance, are now joined to the ſtreets by continued buildings, and more making haſte to meet in like manner, as at Deptford, Iſlington, Mile-end, and Newington-butts in Surry. But the act of parliament obtained

by the city of London, 1760, for widening its paſſages, and pulling down its crowded gates, and laying it more open in many places, has put a ſtop to the rapid progreſs of buildings in the extreme parts of the town; ſince the city is now as healthy to live in as any of the outſkirts, and equally commodious, and is not liable to ſuch dreadful conflagrations as have happened within theſe few years from too much crowding. Beſides, Weſtminſter is in a fair way to join hands with Chelſea, as St. Giles's is with Marybone, and Great Ruſſel-ſtreet by Montague-houſe with Tottenham-court. The circuit of this large maſs, as taken collectively, as conſiſting of the cities of London and Weſtminſter, and by actual admeaſurement in ſtraight lines, may on the Middleſex and Southwark ſides amount to upwards of thirty-ſix miles, excluſive of Greenwich, Chelſea, Knightſbridge, and Kenſington. The number of inhabitants have been variouſly gueſſed at: Maitland in 1739 computes, that within the walls and bars of the city are 725,903; but Sir William Petty, at his laſt computation, ſuppoſed it to contain a million; though in this he takes in a greater compaſs, ſure, than Maitland. This city is under excellent regulations, particularly with regard to beggars, lights, pavements, &c. It is governed by a Lord Mayor, twenty-five aldermen beſides the Lord Mayor, two ſheriffs, the recorder, and common council; their juriſdiction being confined to the city and its liberties, as alſo to Southwark. They are conſervators of the river Thames, from Staines bridge in Surry and Middleſex to the river Medway in Kent; and ſome ſay up to Rocheſter bridge. The government of the out-parts is by juſtices and the ſheriffs of London, who are likewiſe ſheriffs of Middleſex. The city riſes gradually from the Thames bank, and ſtands on a gentle eminence; but the S. E. and S. W. parts of the town, particularly that part on the ſouth ſide of the river, ſtands low, and at ſpring-tides is ſubject to inundations, which have ſometimes happened at Weſtminſter-hall. The ſtreets are generally level, and the principal ones open and extremely well built, the houſes being generally of brick, and extending a conſiderable length. Theſe are chiefly inhabited by tradeſmen, whoſe houſes and ſhops make a much better appearance than commonly thoſe do in any other city in Europe. Perſons of rank moſtly reſide in large elegant ſquares, ſome houſes in which are of hewn ſtone, or a compoſition in imitation of it equally hard and durable, and generally make a grand appearance. Of theſe are great numbers at the Weſt end of the town; as alſo that magnificent pile of buildings called the *Adelphi*, which, with other particulars, will more properly come under the title *Weſtminſter*. What adds moſt to the affluence and ſplendor of this great city, is its commodious port, though near forty miles from the main ſea, whither many ſhips of burden annually reſort from all parts of the world; and thoſe of a moderate bulk can come up as far as London bridge, though the very largeſt are ſtill lower down in the river, while large barges and weſt-country boats can go through bridge, and at a great diſtance up the Thames, carrying goods of all kinds to and from the metropolis. London is reckoned to have two-thirds of the whole trade in England. The ſtrength of this city, having no ſort of fortifications, unleſs we reckon the Tower of London as its citadel, conſiſts in the number of its inhabitants, who are commonly computed to be one ſeventh of all the people in England, and one eighth of the whole people in Great Britain. Here is one cathedral, two collegiate churches, three choirs of muſic, 146 pariſhes, 74 chapels for the eſtabliſhed church, 28 foreign churches, beſides diſſenters meeting-houſes of all perſuaſions, nearly equal to the number of eſtabliſhed churches (reckoned 128) ſeveral popiſh chapels, two Jewiſh ſynagogues, 15 hoſpitals, three colleges, 15 public priſons, eight public ſeminaries or free-ſchools, 131 charity-ſchools in London and Weſtminſter and ten miles round, 15 markets for fleſh, one for live cattle, two herb markets, 23 other markets, 15 inns of court for the ſtudy of the law, 27 ſquares, beſides thoſe within any ſingle building, as the Temple, Somerſet-houſe, &c. three public bridges, a town-houſe or Guildhall, a Royal Exchange, a Cuſtom-houſe, three artillery-grounds, four peſt-houſes, and three royal palaces, St. James's, Somerſet, and Whitehall. The uſual firing in this city, wood being ſcarce and dear, and that moſtly uſed by the bakers, is pit-coal, brought from Newcaſtle upon Tyne, and the biſhopric of Durham, with ſome Scotch coals, all of which, at leaſt 800,000 chaldrons, are annually conſumed; whence the town always appears at a diſtance ſhrouded in ſmoke.

The town is well ſupplied with water from the Thames, the New-river, brought from Ware in Hartfordſhire, and the ſprings at Hampſtead. London annually conſumes above 700,000 ſheep and lambs, and 100,000 head of cattle, beſides a vaſt number of hogs, pigs, poultry of all kinds, &c. &c. In the ſtreets ply daily 1000 hackney-coaches, beſides a great number of ſedan chairs. The penny-poſt, for carrying of letters or ſmall paper parcels within the bills of mortality, or ten miles round London every way, is a great conveniency. Here is a Royal Society, founded by king Charles II. who hold their meetings under a preſident at their houſe in Crane-court, Fleet-ſtreet, where is an obſervatory, library, and muſeum: and 1751 a ſociety of Antiquarians obtained a charter. The public places for amuſement in this city are numerous; as in ſummer, Ranelagh, Vauxhall, Marybone-gardens, and Sadler's Wells, alſo St. James's and Hyde-parks, with a great variety of others of leſs note; and in winter are plays, operas, balls, concerts, the Pantheon, &c. London conſiſts of ſeventy-two companies, each of which has a maſter and wardens, or aſſiſtants annually choſen. The city is divided into twenty-ſix wards, and over each preſides an alderman, who has his deputy; and out of the court of aldermen is annually choſen a lord mayor, who reſides during his mayoralty in an elegant and ſpacious ſtructure, finiſhed in 1751, and called the Manſion-houſe; but its not having a ſufficient opening round it, great part of its beauty is loſt to the eye. London ſends four members to parliament; has an old bridge of hewn ſtone, conſiſting of 19 arches, which was 33 years in building, and finiſhed in 1209; the houſes upon which are pulled down in order to widen the way for foot paſſengers and carriages, and ſome of the middle arches enlarged for barges, &c. and is now a great diſgrace to the city, from the many accidents which almoſt daily happen to thoſe whoſe buſineſs requires their going through. It is to be hoped for the ſake of humanity, ſome leading men in the committee will exert themſelves, and endeavour to get this dangerous nuiſance removed, and rebuilt after the manner of thoſe elegant pieces of architecture, Weſtminſter and Black-friars bridges. In the Tower of London, which is a mile in circuit, and a citadel, are kept the records and ſtate priſoners. It has an arſenal, with arms for 60,000 men: here are alſo the crown, jewels, a mint, &c. Not far off is the Cuſtom-houſe, a very ſpacious building; and near the foot of London bridge is the Monument of the fire of London, mentioned before, September 2, 1666, being a fluted pillar of hewn ſtone, 274 feet high to the cupola, with ſtairs in the inſide leading up to the balcony. The Royal Exchange in Cornhill is a grand building, with the ſtatues of all the kings from Edward I. down to the preſent time, a very few only excepted, which are arranged in niches round the inner area on high. Near theſe is the Royal Bank of England, which is thought to have four millions ſterling in ſpecie; but this is a ſecret which I believe few are let into. The bank of England began to be erected 1732, and has been lately improved by noble additional buildings in the moſt elegant taſte. The church of St Stephen Walbrook, near the Manſion-houſe is reckoned a maſter-piece of architecture. The General Poſt-office in Lombard-ſtreet is a large commodious place. The town-houſe, or Guildhall, is a piece of ancient architecture. St. Mary le Bow in Cheapſide has a very elegant tower or ſteeple; as alſo St. Bride's near Fleet-ditch; but the moſt elegant is that of St. Leonard's Shoreditch. The cathedral of St. Paul ſtands on the higheſt part of the town, and may be ſeen at a great diſtance. It is a very grand ſtructure, built in imitation of St. Peter's church at Rome, by the famous architect Sir Chriſtopher Wren. It is 500 feet long, 250 broad in front, 340 high to the croſs at the top, has 500 ſteps to go up to the gallery on the outſide, 100 feet the diameter of the cupola or dome, in which is a curious whiſpering gallery, and 145 on the outſide, being covered with lead, and the inſide very elegantly painted by Sir James Thornhill. Doctors Commons is not far from St. Paul's, and is a ſpacious commodious ſtructure, with ſeveral handſome courts, where the judges of admiralty, court of delegates, court of arches, &c. meet. Near it is the Heralds office, to which belong three kings at arms, namely, Garter, Clarencieux, and Norroy, with ſix heralds, four purſuivants, and eight proctors. It is a ſpacious building, with convenient apartments, a good library relating to heraldry, and the coats of arms are kept of all the families of note in England. To the S. W. of St. Paul's is Black-friars bridge, already mentioned, which is built according to a plan drawn by Mr. Robert Mylne, and the firſt ſtone of it laid by Sir Thomas Chitty, then lord mayor. The arches, which are only nine in number, are elliptical, and the centre arch one hundred feet wide. Thoſe on the ſides decreaſing in width in a regular gradation, and the arch next the abutment at each end is ſeventy feet wide. It has an open baluſtrade at the top, and a foot-way on each ſide, with room for three carriages a-breaſt in the middle. There are alſo receſſes on the ſides for the foot-paſſengers, each ſupported by two lofty Ionic columns. This ſtructure appears extremely light and elegant, all the arches being very large, and that of the centre already mentioned is exceeded by few in the world, it being conſiderably wider than that of the Rialto at Venice. The ſeſſions-houſe is in the Old Bailey, where they hear and determine criminal cauſes eight times a-year. An elegant new ſeſſions-houſe is juſt finiſhed, and the old one is ſpeedily to be pulled down, in order to make room for the priſon now building inſtead of Newgate. The college of phyſicians in Warwick-lane is a fine ſtructure, but in a crowded ſituation. Temple-bar, the next gate to the city of Weſtminſter, is the fineſt in London; and of modern ſtructure, but has nothing ſtriking unleſs it be the heads of ſtate-priſoners, which are commonly ſtuck upon it. The Temple, now an inn for lawyers, formerly belonged to the knights of Jeruſalem, or knights-templars. The Temple church is reckoned the beſt remains of Gothic architecture in London, where may be ſeen ſome ancient figures of the knights-templars in their armour lying along. With regard to the other curioſities, ſee *Weſtminſter*. London lies about 320 miles S. of Edinburgh, 222 N. W. of Paris, 186 W. of Amſterdam, 520 S. W. of Copenhagen, 613 N. W. of Vienna, 264 S. E. of Dublin, 865 N. E. of Madrid, 841 N. W. of Rome, and 1389 N. W. of Conſtantinople. Lat. 51 deg. 32 min. N. and under the firſt meridian of our Engliſh maps.

LONGEVITY, from *longus*, long, and *vita*, life, length of life. We have ſeveral inſtances of longevity, as Parr, who lived one hundred and thirty-two years and nine months; Henry Jenkins, of Yorkſhire, who lived one hundred and ſixty-nine; the counteſs of Deſmond and Mr. Eccleſtone, both of Ireland, each of whom exceeded 140 years.

LONG-BOAT, in the marine, the largeſt and ſtrongeſt boat in the ſhip. The uſe of the long-boat is to carry great bins, ſuch as water, proviſions, anchors, and cables, and often part of the cargo: ſhe is occaſionally equipped with a maſt, ſails, and rigging, ſometimes armed with ſwivels, muſketoons, and carabines, and can be decked as neceſſity requires.

LONGIMETRY, the art of meaſuring lengths, acceſſible and inacceſſible.

* LONGINUS (DIONYSIUS) a celebrated Greek critic of the third century. His father's name is unknown, but by his mother he was allied to the celebrated Plutarch. His youth was ſpent in travelling with his parents, which gave him an opportunity to increaſe his knowledge and improve his mind. After his travels he fixed his reſidence at Athens, and with the greateſt aſſiduity applied to ſtudy. Here he publiſhed his Treatiſe on the Sublime, which raiſed his reputation to ſuch a height, and gave the Athenians ſuch an opinion of his judgment and taſte, that they made him ſovereign judge of all authors, and every thing was received and rejected by the public according to his deciſions. He ſeems to have ſtaid at Athens a long time; here he taught the academic philoſophy, and among others had the famous Porphyry for his pupil. But it was at length his fortune to be drawn from Athens, and to mix in more active ſcenes; to train up young princes to virtue and glory; to guide the buſy paſſions of the great to noble objects; to ſtruggle for, and at laſt to die in the cauſe of liberty. Zenobia, queen of the Eaſt, prevailed on him to undertake the education of her ſons; and he ſoon gained an uncommon ſhare in her eſteem; ſhe ſpent the vacant hours of her life in his converſation, and modelled her ſentiments and conduct by his inſtructions. That princeſs was at war with Aurelian, and being defeated by him near Antioch, was compelled to ſhut herſelf up in Palmyra, her capital city. The emperor wrote her a letter, in which he ordered her to ſurrender, to which ſhe returned an anſwer drawn up by Longinus, which filled him with reſentment. The emperor laid ſiege to the city, and the Palmyrians were at length obliged to open their gates, and receive the conqueror. The queen and Longinus endeavoured to fly into Perſia, but were unhappily overtaken and made priſoners when they were on the point of croſſing the Euphrates. The queen, intimidated, weakly laid the blame of vindicating the liberty of her country on its true author, and the brave Longinus was baſely carried away to immediate execution, amidſt the generous condolence of

thoſe who knew his merit. He pitied Zenobia, and comforted his friends, looking upon death as a bleſſing, ſince it reſcued his body from ſlavery, and gave his ſoul the moſt deſirable freedom. “This world,” ſaid he, with his expiring breath, “is nothing but a priſon; happy, therefore, is he who gets ſooneſt out of it, and gains his liberty.”

The writings of Longinus were very numerous, ſome on philoſophical, but the greateſt part on critical ſubjects; none of which, except that of the Sublime, is extant. Zozimus praiſes highly Longinus's erudition, his writings, and his fortitude, in ſuffering death; and Eunapius ſays that he was a living library.

LONGESIMUS DORSI, in anatomy, a very complex, long and narrow muſcle, ſituated between the ſpinal apophyſes and the ſacro-lumbaris, from which it is divided by a fatty or cellular line; but at the lower part they are confounded together. The longiſſimus dorſi is an aſſiſtant to the ſacro-lumbaris, eſpecially its vertebral portion, which it helps very powerfully, both by the multiplicity and inſertions of its fibres, in ſuſtaining the vertebræ of the back and loins, while extended, whether in ſitting or ſtanding, and in preventing their ſinking under the weight of the body, or any additional burden. It aſſiſts in performing or counterbalancing all the motions and inflections which theſe vertebræ, eſpecially thoſe of the loins, are capable of in all poſtures of the body. And in this it alſo bears ſome reſemblance to the inferior or vertebral portion of the ſplenius: and theſe two muſcles on each ſide, and the ſacro lumbaris, are of the number of thoſe called vertebrales obliquæ divergentes. *Winſlow's Anat.*

LONGITUDE *of the Earth*, denotes its extent from weſt to eaſt, according to the direction of the equator.

LONGITUDE *of a Star*, &c. in aſtronomy, an arch of the ecliptic, counted from the beginning of Aries to the place where a ſtar's circle of longitude cuts the ecliptic.

LONGITUDE *of a Place*, in geography, its diſtance from ſome firſt meridian, or an arch of the equator intercepted between the meridian of the place and the firſt meridian.

LONGITUDE, in navigation, the diſtance of a ſhip or place, eaſt or weſt, from one another, counted in degrees of the equator. If this diſtance be counted in leagues, miles, &c. or in degrees of the meridian, and not in thoſe proper to the parallel of latitude, it is uſually called departure. Since the difference of longitude between any two places is equal to the arch of the equator intercepted between the two meridians paſſing through the two places; which is analogous to the quantity of time that the ſun requires to move from the meridian of one place to that of another; or, in the language of the Copernicans, that is elapſed between the application of the meridian of one of the places to the ſun and the meridian of the other; for ſince the ſun finiſhes his diurnal revolution in the ſpace of 24 hours, or, which is the ſame thing, ſince the revolution of the earth about her axis is performed in the ſame time, it follows that in every hour there paſſes over the meridian one twenty-fourth part of 360 degrees, or of the whole circumference of the equator, equal to fifteen degrees; in two hours, one twelfth part, or thirty degrees; and in any greater or leſſer part of time, a proportional greater or leſſer part of the equator; whence it follows, that if the difference of longitude, or arch of the equator intercepted between the meridians paſſing through any two places, be known, the difference of the times of the day in thoſe two places is known alſo; and conſequently, the hour in one place being known, the hour in the other place is known alſo; and, on the contrary, if the difference between the times at any two places be known, the difference of longitude between thoſe two places is known alſo, by reducing the difference of the times into degrees and minutes, allowing fifteen degrees to an hour, &c. Hence it is, that if two or more places lie under the ſame meridian, the hour in one will be the ſame with the hour in the other; and, on the contrary, if in two or more places the hour be the ſame, thoſe places lie under the ſame meridian. And, becauſe the ſun in all places conſtantly riſes in the eaſt, he muſt neceſſarily apply himſelf to the meridian of the eaſtermoſt place firſt, and, conſequently, in that place that lies to the eaſtermoſt, the noon happens ſooneſt; and the hour of the day or diſtance of the ſun from the meridian at any other time muſt be greateſt. Whence it appears, that if by any contrivance whatſoever, the hour of the day at the ſame point of abſolute time in two different places can be obtained, the difference of longitude between thoſe places is alſo known; and by comparing the times together, it is eaſy to pronounce which place of the two lies to the eaſtward or weſtward of the other. Wherefore, if two or more perſons can view the ſame appearance at two or more places, and pronounce the time at each place when ſuch appearance was viſible; or if the time when any notable appearance ſhall happen at any place be predicted, and the time when that appearance was viſible at any other place was determined; theſe times being compared together, will give the difference of meridians, or difference of longitude between the two places. Now ſince an eclipſe of the moon proceeds from nothing elſe but an interception of the earth between her and the ſun, by which means ſhe is prevented from reflecting the light ſhe receives from the ſun, the moment that any part of her body begins to be deprived of the ſolar rays, it is viſible to all thoſe people who can ſee her at the ſame time; whence if two or more different people, at two or more different places, obſerve the times when it firſt began or ended, or note the time when any number of digits was eclipſed, or when the ſhadow begins to cover or quit any remarkable ſpot, the difference of thoſe times, if there be any, when compared together, will give the difference of longitude between the places of obſervation. The longitudes of places may alſo be determined from the obſervations of ſolar eclipſes; but theſe being incumbered with the conſiderations of parallaxes, are not near ſo proper as thoſe of the moon are; and each of theſe happening but rarely, another excellent expedient has been thought of, and that is the eclipſes of Jupiter's ſatellites. Jupiter has been found to have four ſatellites or moons conſtantly attending him, always obſerving the ſame laws in moving round about him. See the article *Jupiter*.

Now as neither Jupiter nor any of his attendants have any native light of their own, but ſhine with a borrowed light from the ſun, it happens that each of theſe, in every revolution about Jupiter, ſuffers two eclipſes, one at their entrance into the ſhadow, the other at the entrance of their paſſage behind his body; whence in each revolution of the ſatellite there are four remarkable appearances, by the obſervation of any one of which the buſineſs may be done, viz one at the entrance into the ſhadow, and one at the emerſion out of it; one at the entrance behind the body, and another at the coming out; but the latter of theſe, viz. the ingreſs and egreſs of the ſatellite, into and from under the body, is not ſo much regarded by aſtronomers as the immerſion into and out of the ſhadow, becauſe, in the former, the difficulty of pronouncing the exact time is very great, it requiring, in each obſerver, eyes equally good and ſtrong, and teleſcopes equally large; but the obſervation of the former of theſe viz. the immerſion into, and emerſion out of the ſhadow, is eaſy and practicable, becauſe the quick motions of the ſatellites plunge them ſo quick into the ſhadow of Jupiter, that it is no difficult matter to pronounce, by any teleſcope, by which they may be ſeen, the exact time of their immerſion, and emerſion, as any one may ſoon be ſatisfied, if he will but try the experiment.

Now; inaſmuch as each of theſe happens at the ſame moment of abſolute time, if two or more perſons, in different places, note the time of obſervation, theſe, when compared together, will give the difference of longitude between the two places of obſervation. And, when we conſider the great number of theſe eclipſes that happen every year, there being more viſible in one year than than there are days in it, and, conſequently, but few nights when Jupiter may be ſeen, and which is near eleven months of the year, but that an eclipſe of one or other happens, and ſometimes two or three in a night; the eaſineſs with which they may be made, there requiring only a teleſcope of eight or ten feet in length, which may be almoſt managed with the hand; and the little likelihood there is of miſſing the times of ingreſs or egreſs, they being in a manner momentaneous; and laſtly, the great exactneſs to which they would give the difference of longitude, it being certainly as exact as the latitude can at preſent be taken; it is much to be wondered at, that the more ſkilful part of our ſeamen have ſo long neglected them, and eſpecially in the ſeveral ports into which they ſail.

Beſides theſe, there is another method equally uſeful, expeditious, and certain; and that is, the appulſes of the moon to certain fixed ſtars, and their occultations by the interpoſition of her body; for, the moon finiſhing her revolution in the ſpace of twenty-ſeven days, ſeven hours, forty-three minutes, there are but few clear nights, when the moon does not paſs over, or ſo near to ſome fixed ſtar, that her diſtance from it, or the time of her viſible conjunction with it, may be eaſily obſerved by the teleſcope and micrometer only; and theſe when compared together, or with the viſible time computed to the meridian of ſome place when a good theory of the moon ſhall be obtained, will ſhew the difference of longitude of thoſe places.

In the Philoſophical Tranſactions, Nº 1, we have an account of a ſucceſsful experiment made with two pendulum-watches by major Holmes, in a voyage from the coaſt of Guinea homewards. This and ſome other ſucceſſes encouraged monſieur Huygens ſo far, that, after he had improved the ſtructure of theſe watches, he publiſhed an account at large for the ſhewing how and in what manner theſe watches are to be uſed in finding the longitude at ſea, with directions for adjuſting of them and keeping a journal by them; which account the curious reader may ſee at large in the Philoſophical Tranſactions, Nº 47.

This method has been purſued by the ingenious Mr. John Harriſon, who, after many years labour, has at laſt completed a time-keeper, which has almoſt every requiſite neceſſary for finding the longitude at ſea; and from ſeveral experiments, particularly two voyages to the Weſt Indies, it was found to keep time ſo very accurately as not to vary above a minute in the whole voyage.

LONGITUDINAL, in general, denotes ſomething placed lengthwiſe: thus ſome of the fibres of the veſſels in the human body are placed longitudinally, others tranſverſely, or acroſs.

LONICERA, honey-ſuckle, in botany.

LOOF, in ſhip-building, that part of a ſhip where the bow begins, or where the planks of her fore part begin to bend, and round inward, as ſhe grows narrower approaching the ſtem.

LOOKING-GLASSES are nothing but plane mirrors of glaſs; which being impervious to the light, reflect the images of things placed before them; for the theory of which ſee the articles *Mirror* and *Reflection*.

For the caſting, grinding, and poliſhing glaſſes, ſee *Glaſs*.

For foliating of looking-glaſſes, ſee the article *Foliating*.

LOOM, a frame compoſed of a variety of parts, uſed in all the branches of weaving; for a particular deſcription of which, ſee *Weaving*.

LOPPING, among gardeners, the cutting off the ſide-branches of trees.

The lopping of young trees, that is, of ſuch as are ten or twelve years old, will preſerve them much longer, and will occaſion the ſhoots to grow more into wood in one year, than they do in old tops in two or three. The taking off of large boughs in a careleſs manner deſtroys many a tree; they ſhould therefore always be lopped with great care, and the wound covered with ſome loam to keep it from rotting, and prevent the wet from entering and getting into the body of the trees. All ſorts of reſinous trees, or ſuch as abound with a milky juice, ſhould be lopped but very ſparingly, for they are very ſubject to decay, when cut. The beſt ſeaſon for the lopping theſe is the end of Auguſt, when they will not bleed very much, and the wounds will heal before the hard weather. The generality of the world are againſt pruning timber trees at all, and, where they naturally grow ſtreight and regular, it is much better let alone. But all common faults in ſhape may be regulated by thus lopping them while young, and is can be attended with no ill conſequence to the timber; for the cut not lying near the timber pith cannot affect it, when grown up, and ſquared in the working for beams and other uſes, or to be quartered; for all the defects occaſioned by ſuch wounds, are in the ſuperficial parts, and all the four quarters are perfectly ſound within. As to the large foreſt trees, they ſhould not be lopped at all, except in caſes of great neceſſity, and then the large boughs muſt not be cut, but only the ſide branches, and even theſe muſt be cut off cloſe, that the bark may ſoon cover the wound, and yet a little ſlanting that the water may run off, not lodge upon the cut part. If there is a neceſſity of cutting off a large bough, as by its being broken or cankered, let it be cut off ſlanting at about four feet diſtance from the body of the tree, and that if poſſible near ſome place where there is a young ſhoot from it, which may receive the ſap, and grow up in its place. No ſtump muſt be left ſtanding out farther than this, becauſe they are wounded parts which never can heal, and which will always be letting in the water, and will ſerve as pipes to convey that water into the heart of the body of the tree, and by degrees will utterly ſpoil it. All that grow upright, whether they be large or ſmall branches, muſt in cutting be taken off ſlanting, never evenly, for the ſame reaſon; thoſe boughs that bear from the head are to be cut with the ſlope on the lower ſide, and on any occaſion that great wounds are given to a tree, they ſhould be covered with a mixture of clay and horſe-dung, which will make them heal much ſooner than they otherwiſe would do. *Mortimer's Huſbandry.*

LORD, a title of honour, given to thoſe who are noble, either by birth or creation; in this ſenſe it amounts to much the ſame as peer of the realm, or lord of parliament. This title, by the courteſy of England, is alſo given to all the ſons of dukes and marquiſes, and to the eldeſt ſons of earls: and it is alſo a title of honour beſtowed on thoſe who are honourable by their employments, as lord advocate, lord chamberlain, lord chancellor, &c.

LORICATION, COATING, in chemiſtry, is the covering a glaſs or earthen veſſel with a coat or cruſt of a matter able to reſiſt the heat, to prevent its breaking in the performing an operation that requires great violence of fire. When veſſels are expoſed naked to the greateſt fire, it eaſily happens that they burſt by throwing freſh cold fuel into the fire, for the preventing of which, the operator muſt have recourſe to lorication, or coating.

LOTION, *Lotio*, waſhing, in phyſic, a ſort of medicine compounded of liquid ingredients for beautifying the face, and cleanſing it from any deformity which the blood throws out. It alſo denotes a medicine that holds a medium between a fomentation and a bath.

LOTUS, the ſquare podded vetch, in botany, a genus of plants.

LOVAGE, in botany, the Engliſh name for the liguſticum. See *Liguſticum.*

LOVE-APPLE, the fruit of a ſpecies of ſolanum, a plant cultivated in gardens among us for the ſingularity of its appearance; the Portugueſe eat this fruit either raw or ſtewed, as do alſo the Jew families in England.

LOUIS, *or Knight of* St. LOUIS, the name of a military order in France inſtituted by Louis XIV. in 1693. Their collars are of a flame colour, and paſs from left to right; the king is their grand maſter.

LOUSE, *Pediculus*, in zoology.

LOWERING, among diſtillers, a term uſed to expreſs the debaſing the ſtrength of any ſpirituous liquor by mixing water with it. The ſtandard and marketable price of theſe liquors is fixed, in regard to a certain ſtrength in them called proof; this is that ſtrength, which makes them, when ſhook in a phial, or poured from on high into a glaſs, retain a froth or crown of bubbles for ſome time. In this ſtate ſpirits conſiſt of about half pure, or totally inflammable ſpirits, and half water; and if any foreign or home ſpirit is to be expoſed to ſale, and is found to have that proof wanting, ſcarce any one will buy it, till it has been diſtilled again, and brought to that ſtrength; and if it be above that ſtrength, the proprietor uſually adds water to it to bring it down to that ſtandard. This addition of water, to debaſe its ſtrength, is what is called lowering it. People well acquainted with the goods will indeed buy ſpirits at any ſtrength, only lowering a ſample to the proof ſtrength, and by that judging of the ſtrength of the whole; but the generality of buyers will not enter into this, but muſt have it all lowered for them. There is another kind of lowering in practice among the retailers of ſpirituous liquors to the vulgar; this is the reducing it under the ſtandard of proof. They buy it proof, and afterwards increaſe their profit upon it, by lowering it with water one eighth part. The quantity of ſpirit is what they generally allow themſelves for the addition of water; and whoever has the art of doing this, without deſtroying the bubble proof, as this is eaſily done by means of ſome addition, that gives a greater tenacity to the parts of the ſpirit, will deceive all that judge by this proof alone; that is, very nearly all who are concerned in the ſpirit trade. Such an additional quantity of water, as one eighth, makes the ſpirit taſte ſofter and cooler, and will make many prefer it to the ſtronger ſpirit, which is hotter and more fiery; but unleſs the ſpirit, thus lowered, were tolerably clean, or the proof be ſome other way preſerved, the addition of the water lets looſe ſome of the coarſe oil, which makes the liquor milky, and leaves a very nauſeous taſte in the mouth. *Shaw's Eſſay on Diſtillery.*

LOXIA, in the Linnæan ſyſtem of zoology, the name of a genus of birds of the order of the paſſeres, the diſtinguiſhing characters of which are, that the tongue is plain, equal, and whole; the beak large, thick, and ſhort, and crooked and convex both ways.

LOZENGE, LOZANGE, *Rhombus*, in geometry, a quadrilateral figure, conſiſting of four equal and parallel ſides, two of whoſe oppoſite angles are acute, and the other two obtuſe; the diſtance between the two obtuſe ones being always equal to the length of one ſide: when the ſides are unequal, this figure is called a rhomboides. Scaliger derives the word from the Latin *laurengia*, as this figure ſomewhat reſembles that of a laurel leaf.

LOZENGE, in heraldry, a rhombus, or figure of equal ſides, but unequal angles, reſembling a quarry of glaſs in our old windows, placed erect, pointwiſe. It is in this figure that all unmarried gentlewomen and widows bear their coats of arms; becauſe, as ſome ſay, it was the figure of the Amazonian ſhield; or, as others, becauſe it is the ancient figure of the ſpindle.

LOZENGE, in pharmacy, the ſame with what is otherwiſe called troche.

LUCERNE, in botany, &c. a plant frequently cultivated in the manner of clover, and known among authors by the names of medica and medicago. It is the alfaſa of the Spaniards, and the lucerne, grand treffle, or fœnum Burgundiacum, as ſome botaniſts call it, of the French. It has a perennial root, and an annual ſtalk, which riſes full three feet high in good land, and is garniſhed at each point with trifoilate leaves, whoſe lobes are ſpear-ſhaped, about an inch and a half long, and half an inch broad, ſawed towards the ſtalks. The flowers grow in ſpikes, which are from two to near three inches in length, ſtanding upon naked foot ſtalks two inches long, riſing from the wings of the ſtalks: they are of the pea bloom, or butterfly, kind; of a fine purple colour, and are ſucceeded by compreſſed moon-ſhaped pods, which contain ſeveral kidney-ſhaped ſeeds. It flowers in June, and its ſeed ripens in September.

There are the following varieties of this ſpecies of lucerne, viz. one with violet-coloured flowers; another with yellow flowers; a third with yellow and violet flowers mixed; and a fourth with variegated flowers: but, as Mr. Miller obſerves, theſe are only variations of the ſame plant, ariſing accidentally from the ſeed. However, neither the yellow, nor the variegated, flowered lucerne, is ever ſo ſtrong as that with purple flowers, nor is it, conſequently, ſo profitable to the huſbandman.

Columella calls this the choiceſt of all fodder, becauſe it will laſt ten years, and will bear being cut down four, and ſometimes ſix times in a year; it enriches the land on which it grows, fattens the cattle fed with it, and is a remedy for ſick cattle. About three quarters of an acre of it is abundantly ſufficient to feed three horſes during the whole year. Yet notwithſtanding it was ſo much eſteemed by the ancients, and hath been cultivated to great advantage in France and Switzerland for many years, it has not yet found ſo good a reception in England as it juſtly deſerves; nor is it cultivated here in any conſiderable quantity, though it will ſucceed as well in this country as in either of the laſt mentioned; being extremely hardy, and reſiſting the ſevereſt cold of our climate.

The ſoil in which this plant is found to ſucceed beſt in this country, is a light, dry, looſe, ſandy land, which ſhould be well ploughed and dreſſed, and the roots of all noxious weeds, ſuch as couch graſs, &c. deſtroyed; otherwiſe theſe will over-grow the plants while young, and prevent their progreſs.

The beſt time to ſow the ſeed is about the middle of April, when the weather is ſettled and fair; for if you ſow it when the ground is very wet, or in a rainy ſeaſon, the ſeeds will burſt and come to nothing, as is often the caſe with ſeveral of the leguminous plants; therefore you ſhould always obſerve to ſow it in a dry ſeaſon, and if there happens ſome rain in about a week or ten days after it is ſown, the plants will ſoon appear above ground.

After having well ploughed and harrowed the land very fine, you ſhould make a drill quite acroſs the ground, almoſt half an inch deep, into which the ſeeds ſhould be ſcattered very thin: then cover them over a quarter of an inch thick, or ſomewhat more, with the earth: then proceed to make another drill, about a foot and a half from the former, ſowing the ſeeds therein in the ſame manner as before, and ſo proceed through the whole ſpot of ground, allowing the ſame diſtance between row and row, and ſcatter the ſeeds very thin in the drills. In this manner, an acre of land will require about ſix pounds of ſeed: for when it is ſown thicker, if the ſeeds grow well, the plants will be ſo cloſe as to ſpoil each other in a year or two, the heads of them growing to a conſiderable ſize, as will alſo the roots, provided they have room; for the crown of ſome will meaſure eighteen inches diameter; from which near four hundred ſhoots have been cut at one time, which is an extraordinary increaſe, and this upon a poor dry gravelly ſoil, which had not been dunged for many years, but the roots were at leaſt ten years old; ſo that if this crop be well cultivated, it will continue many years, and be equally good as when it was firſt ſown: for the roots generally run down very deep in the ground, provided the ſoil be dry; and although they ſhould meet a hard gravel a foot below the ſurface, yet their roots would penetrate it and make their way downward, ſome of them having been taken up, which were above a yard in length, and had run two feet into a rock of gravel, ſo hard as not to be looſened without mattocks, and crows of iron, and that with much difficulty.

The reaſon for directing this ſeed to be ſown in rows is, that the plants may have room to grow; and for the better ſtirring the ground between them, to deſtroy the weeds, and encourage the growth of the plants, which may be very eaſily effected with a Dutch hoe, juſt after the cutting the crop each time, which will cauſe the plants to ſhoot again in a very little time, and be much ſtronger than in ſuch places where the ground cannot be ſtirred: but when the plants firſt come up, the ground between ſhould be hoed with a common hoe; and if in doing of this you cut up the plants where they are too thick, it will cauſe the remaining to be much ſtronger. This hoeing ſhould be repeated two or three times while the plants are young, according as the weeds are produced, obſerving always to do it in dry weather, that the weeds may the better be deſtroyed; for if it be done in moiſt weather, they will root and grow again.

With this management, the plants will grow to the heighth of two feet, or more, by the beginning of Auguſt, when the flowers will begin to appear, at which time the lucerne ſhould be cut, obſerving to do it in a dry ſeaſon, if it is to be made hay, and keep it often turned, that it may ſoon dry, and be carried off the ground; for if it lie long upon the roots, it will prevent their ſhooting again. After the crop is taken off, you ſhould ſtir the ground between the rows with a hoe, to kill the weeds, and looſen the ſurface, which will cauſe the plants to ſhoot out again in a ſhort time, ſo that by the beginning of September there will be ſhoots four or five inches high, when you may turn in ſheep upon it to feed it down: nor ſhould the ſhoots be ſuffered to remain upon the plants, which would decay when the froſty weather comes on, and fall down upon the crown of the roots, and prevent their ſhooting early the ſucceeding ſpring.

The beſt way therefore is to feed it until November, when it will have done ſhooting for that ſeaſon: but it ſhould not be fed by large cattle the firſt year, becauſe the roots being young, would be in danger of being deſtroyed, either by their trampling upon them, or their pulling them out of the ground: but ſheep will be of ſervice to the roots by dunging the ground, provided they do not eat it too cloſe, ſo as to endanger the crown of the roots.

In the beginning of February, the ground between the rows ſhould be again ſtirred with the hoe, to encourage them to ſhoot again: but in doing this you ſhould be careful not to injure the crown of the roots, upon which the buds are at that time very turgid, and ready to puſh. With this management, if the ſoil be warm, by the middle of March the ſhoots will be five or ſix inches high, when, if you are in want of fodder, you may feed it down till a week in April; after which it ſhould be ſuffered to grow for a crop, which will be fit to cut the beginning of June, when you ſhould obſerve to get it off the ground as ſoon as poſſible, and ſtir the ground again with the Dutch hoe, which will forward the plants ſhooting again; ſo that by the middle, or latter end of July, there will be another crop fit to cut, which muſt be managed as before; after which it ſhould be fed down again in autumn: and as the roots by this time will have taken deep hold in the ground, there will be little danger of hurting them, if you ſhould turn in larger cattle; but you muſt always obſerve not to ſuffer them to remain after the roots have done ſhooting, leſt they ſhould eat down the crown of the roots below the buds, which would conſiderably damage, if not deſtroy them.

In this manner you may continue conſtantly to have two crops to cut, and two feedings upon this plant; and in good ſeaſons there may be three crops cut, and two feedings, which will be a great improvement, eſpecially as this plant will grow upon dry barren ſoils, where graſs will come to little, and will be of great uſe in dry ſummers, when graſs is often burnt up: and as it is an early plant in the ſpring, ſo it will be of great ſervice when fodder falls ſhort at that ſeaſon, when it will be fit to feed at leaſt a month before graſs or clover; for this plant is often eight inches high by the middle of March, at which time the graſs in the ſame place is ſcarcely one inch high.

Cold will not injure this plant; for in the very cold winter, 1728-9, ſome roots of this plant which were dug up in October, and laid upon the ground in the open air till the beginning of March, were again planted, and they ſhot out very vigorouſly ſoon after: nay, even while they lay upon the ground, they ſtruck out fibres from the under ſide of the roots, and had begun to ſhoot green from the crown of the roots: but wet will altogether deſtroy the roots; for a little of the ſeed being ſown upon a moiſt ſpot of ground for a trial, it came up very well and flouriſhed exceedingly during the ſummer ſeaſon; but in winter, when the great rains fell, the roots began to rot at bottom; and before the ſpring moſt of them were deſtroyed.

The beſt places to procure the ſeed from, are Swiſſerland and the northern parts of France, which ſucceeds better with us than that which comes from a more ſouthern climate: but this ſeed may be ſaved in England in great plenty; in order to which, a ſmall quantity of the plants ſhould be ſuffered to grow uncut till the ſeeds are ripe, when it muſt be cut, and laid to dry in an open barn, where the air may freely paſs through: but the ſeed muſt be defended from the wet; for if it be expoſed thereto, it will ſhoot while it remains in the pod, whereby it will be ſpoiled. When it is quite dry, it muſt be threſhed out, and cleanſed from the huſk, and preſerved in a dry place till the ſeaſon for ſowing it: and this ſeed ſaved in England is much preferable to any brought from abroad; the plants produced from it being much ſtronger than thoſe produced from the French, Helvetian, and Turky ſeeds, which are ſown at the ſame time, and on the ſame ſoil and ſituation.

* LUCIAN, a celebrated Greek author, in the firſt century, was born at Samoſata, of obſcure parents, under the reign of the emperor Trajan. His father reſolved to make him a ſculptor, and put him apprentice to his ſiſter's huſband; but Lucian being uſed ill by his uncle for breaking a table he was endeavouring to poliſh, became diſguſted with that art, and applied himſelf ſolely to polite literature and philoſophy, to which his taſte led him. Afterwards he became an advocate, but the wranglings of the bar being diſagreeable to him, he engaged in the profeſſion of a rhetorician. He ſtudied firſt at Antioch, whence he paſſed into Jonia, then into Gaul and Italy, and returned into his own country through Macedonia. Marcus Aurelius, being informed of his merit, made him ſuperintendant of Egypt. Lucian died under the reign of that prince, aged ninety; and, according to Suidas, was torn in pieces by dogs. There are ſtill extant his Dialogues, and other works, well written in Greek, in which he has joined the uſeful to the agreeable, inſtruction to ſatire, and erudition to elegance. We every where meet with that fine and delicate raillery which characteriſes the Attic taſte.

LUCID INTERVALS, in lunatics, the times wherein they appear to be in their ſenſes.

LUCIDA, in aſtronomy, an appellation given to ſeveral fixed ſtars on account of their ſuperior brightneſs.

LUCIUS, the pike, or jack, in ichthyology, a ſpecies of eſox, with a depreſſed roſtrum. The pike grows to a conſiderable ſize, but uſually is found from fourteen inches to two feet in length: it is all over variegated with round yellowiſh ſpots. It is a well known and very voracious fiſh.

* LUCRETIA, a Roman lady, illuſtrious for her beauty, noble extraction, and virtue, was married to Collatinus, who was related to Tarquin the Proud, king of Rome. While that prince laid ſiege to the town of Ardea, his ſon Sextus entertained his two brothers and Collatinus at ſupper, when the converſation turned on the beauty of their wives, every one aſſerting that his wife was the handſomeſt. The diſpute growing hot, Collatinus propoſed a means of deciding it, by their immediately ſetting out on horſeback, and paying the ladies a viſit. Being heated with wine, they eagerly agreed to the propoſal, and rode full ſpeed to Rome, where they found Tarquin's daughters-in-law regaling themſelves luxuriouſly with perſons of the ſame age with themſelves. They afterwards went to Collatia, and though it was then late, found Lucretia at work with her maids. They all agreed that ſhe exceeded the others, and returned back to the camp. Sextus, inflamed with love, repaired a few days after to Collatia, where he was received by Lucretia with all the polite-

neſs due to a near relation, and the king's eldeſt ſon. After ſupper he was conducted to his bed chamber; but the inſtant he imagined every one was faſt aſleep, he went ſoftly, with a drawn ſword in his hand, into Lucretia's apartment, where, after threatening to kill her in caſe ſhe made the leaſt noiſe, he made a declaration of his paſſion, and employed the moſt tender entreaties, as well as the moſt terrible menaces, but all to no purpoſe. Lucretia perſiſting in her conſtancy and reſolution, was even unmoved at the fear of death; but ſhe could not reſiſt his menace of expoſing her to the utmoſt infamy: Sextus declared, that having killed her, he would kill a ſlave, and then laying him in her bed, ſpread a report, that having catched them in the act of adultery, he had puniſhed them with death Having by this means accompliſhed his infamous deſign, he withdrew, proud of his conqueſt; but the lady, plunged in a deep melancholy, ſent to intreat her father, who was in Rome, and her huſband, who was at the ſiege of Ardea, to come to her with all ſpeed: they accordingly did ſo, when ſhe told them her misfortune, and conjured them to revenge her cauſe: this they promiſed, and gave her all the conſolation in their power; but ſhe was quite inconſolable, and drawing forth a dagger which ſhe had hid under her cloaths, ſtabbed herſelf to the heart. Brutus, who ſaw this ſpectacle, found the opportunity he ſo long ſought of freeing Rome from Tarquin's tyranny, which he ſo far improved, that the kingly power was aboliſhed, and the liberty of the Romans reſtored. Her raviſher was expoſed to his own remorſe, or the ſevere reproaches of the family he had ruined; for he retired to the city of Gabii, where he had formerly commanded, and there loſt his life ſoon after.

LUES, among phyſicians, is, in general, uſed for a diſeaſe of any kind; but, in a more particular ſenſe, is reſtrained to contagious and peſtilential diſeaſes: thus the lues Gallica, or venerea, ſignifies the venereal diſeaſe.

LUFF, amongſt ſailors, the order from the pilot to guide the ſhip's head nearer to the direction of the wind, or nearer to that part of the horizon from which the wind bloweth.

She keeps a good LUFF, i e. holds her way well, without deviating to the leeward of her courſe.

LUKE, or *Goſpel of* ST. LUKE, a canonical book of the New Teſtament. Some think it was properly St. Paul's goſpel, and that when that apoſtle ſpeaks of his goſpel, he means what is called St. Luke's. Irenæus ſays, that St. Luke digeſted into writing what St. Paul preached to the Gentiles: and Gregory Nazianzen tells us, that St. Luke wrote with the aſſiſtance of St. Paul. "St. Luke, ſays a modern writer, is pure, copious, and flowing in his language, and has a wonderful and entertaining variety of ſelect circumſtances in his narration of our Saviour's divine actions. He acquaints us with numerous paſſages of the evangelical hiſtory not related by any other evangeliſt: both in his Goſpel and Apoſtolical Acts, he is accurate and neat, clear and flowing, with a natural and eaſy grace: his ſtyle is admirably accommodated to the deſign of his hiſtory; it had a good deal of reſemblance to that of his great maſter St. Paul; and, like him, he had a learned and liberal education. I believe he had been very converſant with the beſt claſſics; for many of his words and expreſſions are exactly parallel to theirs. *Blackwall's Sacred Claſſics.*

ST. LUKE *the Evangeliſt's Day*, a feſtival in the Chriſtian church, obſerved on the 18th of October.

LUMBAGO, in phyſic, a violent pain in the loins, which affects the patient in ſuch a manner that he can ſcarcely move. It is a ſcorbutic ſymptom, and frequently excited by the gout or rheumatiſm.

LUMBRICAL, a name given to four muſcles of the fingers, and to as many of the toes.

* LUNA, in pagan worſhip, one of the names of Diana, who is ſaid to have been called Luna in heaven, and Diana on earth. Others make her a diſtinct deity, and call her the daughter of Hyperion and Theia. The Egyptians worſhipped her both as male and female, the men ſacrificing to her as Luna, the women as Lunus, and each ſex on thoſe occaſions aſſumed the dreſs of the other.

LUNA, among chymiſts, ſignifies ſilver.

LUNAR, ſomething belonging to the moon; thus we ſay, lunar month, lunar year, lunar dial, lunar eclipſe, &c.

LUNATIC, a perſon affected with lunacy, the cure of which is to be attempted by evacuations of all kinds; as bleeding, vomiting, cathartics, &c.

LUNGS, a part of the human body,

which is the cauſe or inſtrument of reſpiration. The lungs are the largeſt viſcus of the thorax; they are ſituated in the two ſides of it, with the heart as it were between them; and are connected, by means of the mediaſtinum, with the ſternum and vertebræ; with the heart, by means of the pulmonary veſſels, and immediately with the aſpera arteria. The colour of the lungs, in infants, is a fine florid red; in adults, it is darker; and in old people, livid, or variegated with black and white. When inflated, they have ſome reſemblance to the hoof of an ox, and are convex on the upper ſide, and concave underneath. They are divided into two large lobes, the right and left; the left, which is the ſmaller, is divided again into three ſmaller ones. The membrane with which the lungs are ſurrounded is continuous with the pleura. The ſubſtance of the lungs is ſpongeous, or veſiculous, and they ſeem, indeed, entirely compoſed of a number of ſmall veſicles of a fleſhy texture, and of a variety of veſſels.

The veſſels of the lungs are the bronchia, the bronchial artery and vein, the pulmonary artery and vein, the nerves, and the lymphatics.

The uſes of the lungs are, 1. To perform the office of reſpiration, by which the blood is attenuated in the plexus of the arteries called the rete vaſculoſum. 2. To be aſſiſtant to the voice in ſpeaking, and to the ſenſe of ſmelling. They are alſo emunctories of the blood, and are of many other important ſervices.

LUNG-WORT, *Pulmonaria*, in botany. See *Pulmonaria*.

LUNISOLAR YEAR, in chronology, a period of years produced by multiplying the cycle of the moon, 19, by 28, that of the ſun; the product is 532; in which ſpace of time theſe luminaries return to the ſame point in the heavens.

LUNULA, in geometry, a plane figure like a creſcent, or half-moon, for the quadrature of which, ſee *Quadrature*.

LUPERCALIA, in antiquity, a feſtival of the ancient Romans in honour of the god Pan, obſerved on the 15th of February, and ſo called from the luperci, the prieſts of that fabulous deity.

LUPUS MARINUS, the ſea-wolf, in ichthyology. It is a very ſingular fiſh, growing to four or five feet long.

LUPUS, in aſtronomy, a conſtellation of the ſouthern hemiſphere. See *Centaur*.

LURE, in falconry, a device of leather, in the form of a bird, with two wings ſtuck with feathers, and baited with a piece of fleſh, wherewith to reclaim or call back a hawk, when at a conſiderable diſtance.

LUSTRE, the gloſs or brightneſs appearing on any thing, particularly on manufactures of ſilk, wool, or ſtuff. It is likewiſe uſed to denote the compoſition or manner of giving that gloſs. The luſtre of ſilks is given them by waſhing in ſoap, then clear water, and dipping them in alum-water cold. To give ſtuffs a beautiful luſtre, for every eight pounds of ſtuff allow a quarter of a pound of linſeed; boil it half an hour, and then ſtrain it through a cloth, and let it ſtand till it is turned almoſt to a jelly: afterwards put an ounce and a half of gum to diſſolve twenty-four hours; then mix the liquor, and put the cloth into this mixture; take it out, dry it in the ſhade, and preſs it. If once doing is not ſufficient, repeat the operation. Curriers give a luſtre to black leather firſt with juice of barberries, then with gum-arabic, ale, vinegar, and Flanders glue, boiled together. For coloured leather, they uſe the white of an egg beaten in water. Moroccoes have their luſtre from juice of barberries and lemon or orange. For hats, the luſtre is frequently given with common water, ſometimes a little black dye is added: the ſame luſtre ſerves for furs, except that for very black furs they ſometimes prepare a luſtre of galls, copperas, Roman alum, ox's marrow, and other ingredients.

LUSTRUM, in Roman antiquity, a general muſter and review of all the citizens and their goods, which was performed by the cenſors every fifth year, who afterwards made a ſolemn luſtration.

LUTE, or **LUTING**, among chymiſts, a mixed, tenacious, ductile ſubſtance, which grows ſolid with drying; and when applied to the junctures of veſſels for diſtillation, ſtops them up. When the ſubject is merely aqueous, linſeed meal, ground fine, and well worked up into a ſtiff paſte with the white of an egg, makes a proper luting: it grows hard with heat, and if it happens to crack, it is repaired by a freſh application. In the diſtillation of all fermented inflammable ſpirits and volatile alcaline ſalts, a paſte made of the ſame meal, well worked up with cold water, anſwers very well. In the diſtillation of mild acids or acetous liquors, a bladder ſteeped in water, till it grows ſlimy, makes an excellent luting. A luting that acquires a ſtony hardneſs is neceſſary in the diſtillation of foſſil acids, as vitriol, ſea-ſalt, &c. which is called the philoſophical luting, and may be prepared from the calx of copperas and quick-lime, by boiling the caput mortuum in vitriol, in ſeveral parcels of water, till thoroughly waſhed, then drying the powder, and preſerving it in a cloſe veſſel. This powder is to be rubbed with an equal quantity of quick-lime, and wrought into a paſte with the whites of eggs firſt beat thin; and this luting is immediately to be applied to the veſſel, being firſt a little heated: or beat pure ſand and potter's clay together in ſuch proportion with water, till the matter no longer ſticks to the fingers; then add a fourth part of common lime, and the drier this is applied the better, provided it be left ductile, and the cracks are eaſily ſtopped up by the ſame. To coat veſſels in the ſtronger diſtillations with a naked fire, beat fat potters earth and powdered ſand with water into a well-wrought paſte, which will not ſtick to the fingers, adding a little common lime at the laſt, and beating them together: then, the veſſel being expoſed to the vapour of hot water, ſpread the cement all over it equally with the hand, afterwards ſprinkle the ſurface of the coating with hot and dry ſand, and let the coat dry ſlowly in a cool place, minding to fill up the cracks. The London chymiſts uſe for the ſame purpoſe ſifted wood-aſhes beat up to a due conſiſtence with the white of eggs and a little gum water. The ſame ſervice may be performed in a more excellent manner by a mixture of linſeed oil and ceruſs made by inſolation or decoction, and afterwards ground upon a marble with freſh ceruſs, till the whole be of the conſiſtence of an unguent.

LUTE is alſo a muſical inſtrument with ſtrings.

* LUTHER (Martin) a celebrated reformer, was born at Iſleben in Saxony, on the 10th of November 1483. He finiſhed his courſe of philoſophy at Erford, and was made maſter of arts in 1503, at 20 years of age. One day as he was walking out of that city, he was ſtruck down with lightning, and his companion was killed, which had ſuch an effect upon him, that he reſolved to embrace the monaſtic ſtate; and therefore at 22 years of age entered amongſt the Auguſtines at Erford, and when he was 24, took prieſt's orders. Some time after he was ſent to teach philoſophy at Wittemberg, where the duke of Saxony had founded an univerſity: he was there much admired; was made doctor and profeſſor of divinity, and acquired great reputation by his lectures and ſermons. In 1516 Luther began to apply himſelf to the ſtudy of the Greek and Hebrew languages. In 1517, pope Leo X. having publiſhed indulgences, in order to enable him to build the magnificent church of St. Peter at Rome, theſe were managed in the moſt ſcandalous manner. Albert of Brandenburg, archbiſhop of Mentz and Magdeburg, who had a commiſſion for Germany, gave out this commiſſion to John Iccelius, a Dominican friar, and others of his order, who immediately expoſed them to ſale; and Iccelius boaſted of "having ſo extenſive a commiſſion "from the pope, that though a man "had deflowered the Virgin Mary, yet "for money he might be pardoned: "adding, that he not only granted par- "dons for ſins paſt, but for thoſe to "come." Luther, whoſe zeal was naturally warm and active, was now unable to contain himſelf, and therefore publicly fixed upon the church of Wittemberg, next the caſtle, a theſis upon indulgences, containing 95 propoſitions, challenging any one to oppoſe them either by writing or diſputation. This piece was no ſooner publiſhed, than Iccelius maintained and publiſhed at Francfort a theſis in oppoſition to it, and animating the clergy of his order againſt Luther, anathematized him from the pulpit as a moſt damnable heretic, and publicly burnt his theſis at Francfort. In return, Iccelius's theſis was burnt by the Lutherans at Francfort, without Luther's having any hand in it. But he was now attacked by adverſaries innumerable from every ſide; three of the principal of whom were John Echius, Sylveſter Prierias, and one Jacobus Hogoſtratus, a preaching friar. In the year 1518, Luther, contrary to the advice of his friends, reſolved to ſhew his obedience to authority, and went to the monaſtery of Heidelberg, while the chapter was held, and there maintained a diſpute concerning juſtification by faith, which Bucer, who was preſent, took down in writing. In the mean time the zeal of his adverſaries growing daily more active, he was at length accuſed to Leo X. as a heretic; and therefore, on his return from Heidelberg, he wrote a letter in the moſt ſubmiſſive terms to that pope. Meanwhile

the emperor Maximilian applied to Leo by letter to put a ſtop to theſe dangerous diſputes, promiſing that he would ſtrictly execute in the empire whatever his Holineſs ſhould enjoin. The pope now gave orders that Luther ſhould be cited to appear at Rome within ſixty days, to give an account of his doctrine; and wrote to the elector of Saxony to exhort him to put Luther into the hands of his legate. At the ſame time he ſent a brief to cardinal Cajetan, ordering him to bring Luther before him, denouncing the ordinary puniſhment of excommunication, interdiction, and privation of goods, againſt thoſe that ſhould receive Luther, and give him protection, and promiſing a plenary indulgence to all that ſhould aſſiſt in delivering him up. Luther uſed all poſſible means to prevent his being carried to Rome, and to obtain a hearing in Germany; and both the univerſity of Wittemberg and the elector of Saxony interceding for him, the pope conſented that his cauſe ſhould be tried before cardinal Cajetan; on which Luther immediately ſet out for Augſburg, with letters from the elector, and having obtained an aſſurance of ſafety, appeared before the cardinal: but finding that he would not be allowed to give reaſons, that the legate ſteadily maintained that the pope alone could decide upon the ſenſe of ſcripture, unleſs he brought his recantation with him, he withdrew from Augſburg, but before his departure publiſhed a formal appeal to the pope. Luther was a man of invincible courage, and was beſides animated by an aſſurance of protection from Frederic of Saxony; therefore on the legate's writing a letter to that prince, in which he charged Luther with maintaining damnable propoſitions, and exhorted him either to ſend him to Rome, or baniſh him from his dominions, he communicated it to Luther, who immediately drew up a defence of himſelf; and ſoon after the elector told the legate, that ſeveral able men, both in his own and other univerſities, did not think Luther's doctrine either impious or heretical; and that as he had not been convicted of hereſy, he could neither baniſh him nor ſend him to Rome; and that ſince Luther offered to ſubmit to the judgment of ſeveral univerſities, he thought they ought to hear him, or at leaſt to ſhew him his errors. On the other hand, Luther not only continued to teach the ſame doctrines, but ſent a challenge to all the inquiſitors to come and diſpute with him, offering them not only ſafe-conduct from his prince, but that they ſhould be well entertained, and have their charges borne while they remained at Wittemberg. While theſe things paſſed in Germany, Leo publiſhed a brief, by which he declared, "That "the pope, the ſucceſſor of St. Peter, "and the vicar of Jeſus Chriſt, had "power to pardon the guilt and puniſhment of ſin: and that by indulgences "properly obtained, the dead and the "living are immediately freed from the "puniſhment due to their actual ſins." Upon this Luther publiſhed an appeal from the pope to a general council. The pope now endeavoured to gain over the elector of Saxony, by ſending to him Militius, his chamberlain, with a golden roſe, as a mark of his particular favour; ordering Militius to require the elector to oblige Luther to retract, or deny him his protection: but that reformer having now opened the elector's eyes, Militius received a very cool reception. In the mean time Luther's doctrine ſpread and prevailed greatly, and he received encouragement at home and abroad. In the year 1519, Luther had a famous diſpute at Leipſic with John Eccius, on purgatory, indulgences, and the pope's ſupremacy; which ended like moſt others, in the parties being not in the leaſt nearer in point of opinions. The ſame year Luther's books about indulgences were formally cenſured by the divines of Louvain and Cologne: and at length, continual importunities of his adverſaries induced Leo to publiſh a formal condemnation of him, by a bull dated the 15th of June 1520. Luther immediately wrote againſt it in the moſt ſevere terms, and then aſſembling the ſtudents at Wittemberg, threw both the pope's bull and decretals into a fire prepared for that purpoſe. Luther had afterwards the courage to appear in perſon at the diet at Worms, where he declared, "That unleſs he was convinced by texts of "Scripture, or by reaſon, he neither "could nor would retract any thing, be"cauſe it was not lawful for him to act "againſt his conſcience." The elector of Saxony now foreſeeing, that the emperor Charles V. king of Spain, was going to publiſh a bloody edict againſt Luther, and that it would be impoſſible to protect him any longer without bringing himſelf to trouble, had him ſeized and ſecretly carried to the caſtle of Wittemberg, and ſoon after the bull was publiſhed, in which he forbids all perſons, under the penalty of high treaſon, loſs of goods, and being put to the ban of the empire, to receive or defend, maintain or protect him or his opinions. But while this bull was thundering throughout the empire, Luther was ſafely ſhut up in his caſtle, which he afterwards called his hermitage and his Patmos, where he held a conſtant correſpondence with his friends at Wittemberg, and employed himſelf in compoſing books. But the emperor was no ſooner gone into Flanders, than Luther's doctrine ſpread faſter than before. However, Henry VIII. of England, to ſhew his zeal and his learning, wrote a treatiſe on the Seven Sacraments, againſt Luther's book of the Captivity of Babylon, for which Leo complimented him with the title of Defender of the Faith. Luther, after ten months retirement, appeared publicly again, and ſoon after not only publiſhed a German tranſlation of the New Teſtament, and ſeveral other works, but married Catherine de Bone, a nun who had eſcaped from her confinement. At length the emperor called a diet at Spires, by which a decree was publiſhed, enjoining the execution of the edict of Worms; but fourteen cities appealed from this decree; and this was the famous proteſtation which gave the name of Proteſtants to the reformers in Germany. In ſhort, Luther's German tranſlation of the bible was firſt publiſhed in the year 1534. He lived to ſee the opening of the council of Trent, for accommodating the differences in religion, and ſpared no pains to engage the Proteſtant princes to oppoſe that council with vigour. Theſe meaſures he purſued till his death, which happened at Iſleben, on the 18th of February 1546, in the 63d year of his age. Soon after his body was put into a leaden coffin, and carried with funeral pomp to the church at Iſleben, when Dr. Jonas preached a funeral ſermon upon the occaſion. The earls of Mansfeldt deſired that his body might be interred in their territories; but the elector of Saxony inſiſting on his being brought back to Wittemberg, this was done, and he was interred there with the greateſt pomp; princes, nobles, and ſtudents without number attended the funeral proceſſion, and Melancton made his funeral oration. It is remarkable that the papiſts invented a thouſand lies about his death; ſome ſaid that he killed himſelf; others, that he was ſtrangled by the devil; and others, that his corpſe ſtunk ſo abominably, that they were forced to leave it in the way as it was carried to be interred. But while we are giving theſe inſtances of the malice of the Papiſts, we ought not to forget the more generous conduct of Charles V. whoſe troops being quartered at Wittemberg in 1547, a ſoldier gave Luther's effigies, in the church of that caſtle, two ſtabs with his dagger; and the Spaniards earneſtly deſired that his tomb might be demoliſhed, and his bones dug up and burnt: but that emperor wiſely replied, "I have nothing farther to do with Luther; he has henceforth another judge, whoſe juriſdiction it is not lawful for me to uſurp. Know, that I make not war with the dead, but with the living, who ſtill make war with me." He would therefore not ſuffer his tomb to be demoliſhed, but forbad any attempt of that nature upon pain of death. Luther brought over to his ſentiments Saxony, Denmark, Sweden, and a great part of the other kingdoms and ſtates of Europe.

LUTHERANS, the Chriſtians who follow the opinions of Martin Luther, one of the principal reformers of the church in the ſixteenth century.

LUTHERN, in architecture, a kind of window over the cornice, in the roof of a building; ſtanding perpendicularly over a naked wall, and ſerving to illuminate the upper ſtory.

Lutherns are of various forms, as ſquare, ſemi-circular, round, called bulls eyes, flat arches, &c.

LUXATION, *Luxatio*, in ſurgery, the receſs or removal of the moveable extremity of a bone from the hollow or ſocket in which it naturally moved, accompanied with a hindrance of motion. This removal is either total or partial; the former is a luxation, and the latter a diſtortion. The method of healing luxations is very near the ſame with that of fractures. To cure a luxation two things are neceſſary; firſt, a reduction of the luxated parts; and ſecondly, a retention of them in their natural ſituation. We are alſo, during the courſe of the cure, by proper remedies and a due regimen, to mitigate the moſt troubleſome ſymptoms, and to prevent future ones.

LYCEUM, in Grecian antiquity, an academy ſituated upon the banks of the Iliſſus at Athens. It was compoſed of porticos and walks, where Ariſtotle taught philoſophy, walking there conſtantly every day till the hour of anointing, whence he and his followers were called Peripatetics. See *Peripatetics.*

LYCHNIS, catch-fly, or cuckow-flower, in botany, a genus of plants.

LYCIUM, Avignon-thorn, in botany.

LYCODONTES, in natural hiſtory, the petrified teeth of the lupus-piſcis, or wolf-fiſh, frequently found foſſile.

LYCOPERDON, puff ball, in botany, a genus of fungus's, of a fleſhy ſubſtance like other muſhrooms, and roundiſh ſhape.

LYCOPODIUM, wolf's claw-moſs, in botany, a genus of moſſes conſiſting of branches, furniſhed with leaves, and producing ſpikes formed of ſquamæ, of a different figure from the leaves.

LYCOPUS, water hore-hound, in botany.

* LYCURGUS, the celebrated legiſlator of the Spartans, was the ſon of Eunomes, king of Sparta. He travelled to Greece, to the iſle of Crete, to Egypt, and even to the Indies, to converſe with the ſages and learned men of thoſe countries, and to learn their manners, cuſtoms, and laws. After the death of his brother Polydictes, king of Sparta, his widow offered the crown to Lycurgus, promiſing ſhe would make herſelf miſcarry of the child of which ſhe was pregnant, provided he would marry her; but Lycurgus nobly refuſed theſe advantageous offers, and afterwards contented himſelf with being tutor to his nephew Charillus, about the eight hundred and ſeventieth year before the Chriſtian æra, and reſtored him the government when he came of age. Notwithſtanding this generous conduct, he was accuſed of a deſign to uſurp the crown: this calumny obliged him to retire to the iſland of Crete, where he applied himſelf to the ſtudy of the laws and cuſtoms of nations. At his return to Lacedæmon he reformed the government, and to prevent the diſorders occaſioned by luxury, and the love of riches, prohibited the uſe of gold and ſilver, placed all the citizens in a ſtate of equality, and introduced the ſtricteſt temperance, the moſt exact diſcipline, and thoſe admirable laws that have been celebrated by all hiſtorians. He is nevertheleſs juſtly blamed for having eſtabliſhed it as a law, that the girls ſhould wear an immodeſt dreſs, and for obliging them to perform the ſame exerciſes as the boys. The barbarous regulation he made againſt the infants, who, on their coming into the world, gave no hopes of their ever being vigorous and well made, is ſtill more blameable. But excepting theſe, and a few other laws, it muſt be confeſſed that Lycurgus's inſtitutions were wiſe and excellent. It is ſaid, that to engage the Lacedæmonians to obſerve them inviolably, he made them promiſe with an oath not to change any part of them till his return, and he afterwards went to the iſland of Crete, where he killed himſelf, after having ordered, that his aſhes ſhould be thrown into the ſea, for fear leſt if his body ſhould be carried to Sparta, the Lacedæmonians would think themſelves abſolved from their oath.

LYING-TO, or LYING-BY, in navigation, arranging the ſails in ſuch a ſituation that they counteract each other nearly with equal effort, ſome of them drawing her forward, and others forcing her back; the effect of which is, that ſhe makes no way through the ſea, only a very little to the leeward. The intent of lying-by, in general, is to wait for ſome ſhip or boat which is approaching or expected; or in the night-time to prevent running on land, ſhoals, or in the way of danger apprehended to be near.

LYING-TO *in a ſtorm*, is going with a very little ſail to keep the ſhip from rolling violently, and is more properly expreſſed trying.

LYMPH, *Lympha*, a fine fluid, ſeparated in the body from the maſs of blood, and contained in peculiar veſſels, called lymphatics.

The uſe of the lymph, Dr. Keil obſerves, may be gathered from the conſideration of the parts into which it diſcharges itſelf: that which comes from the head, neck, and arms, is thrown into the jugular and ſubclavian veins; all the lymphatics which the parts in the cavity of the thorax ſend out, empty themſelves into the thoracic duct; and the lymph from all the reſt of the body, flows to the receptacle of the chyle; ſo that there can be no doubt but its chief uſe is to dilute and perfect the chyle before it mixes with the blood.

LYNX, or OUNCE, in zoology, a ſpecies of the felis kind, with a truncated tail, a brown body ſpotted with black; the head is large, but not very long; the forehead is flat; the eyes are very large and fierce; the ears are very large and open, but they terminate in a point at the top, and are there ornamented with a pencil of fine black hairs; the mouth is furniſhed with very terrible teeth, and there are whiſkers about it, as alſo over the eyes; the neck is long and thick, the breaſt large and broad, the legs ſtrong, the claws terrible, the tail ſhort and abrupt; and the whole animal large and robuſt, ſomewhat leſs than the lion, very fierce, and remarkable for the quickneſs of its ſight.

LYRE, *Lyra*, a muſical inſtrument of the ſtring kind, much uſed by the ancients. The lyre, among poets, painters, ſtatuaries, carvers, &c. is attributed to Apollo and the muſes.

LYRE, *Lyra*, in aſtronomy, a conſtellation of the northern hemiſphere, the number of whoſe ſtars in Ptolemy's and Tycho's catalogues are only ten, but nineteen in the Britannic catalogue.

LYRIC, in general, ſignifies ſomething ſung or played on the lyre: but it is more particularly applied to the ancient odes and ſtanzas, anſwering to our airs and ſongs, and may be played on inſtruments.

The lyric is, of all kinds of poetry, the moſt poetical, and is as diſtinct, both in ſtyle and thought, from the reſt, as poetry is in general from proſe: it is the boldeſt of all other kinds, full of rapture, and elevated from common language the moſt that is poſſible: ſome odes there are likewiſe, in the free and looſe manner, which ſeem to avoid all method, and yet are conducted by a very clear one; which affect tranſitions ſeemingly without art, but for that reaſon have the more of it; which are above connection, and delight in exclamations and frequent invocations of the muſes; which begin and end abruptly, and are carried on through a variety of matter with a ſort of divine pathos; above rules and laws, and without regard to the common forms of grammar. Pindar has ſet his ſucceſſors the example of digreſſions and excurſions. To write a lyric poem are required not only a flowing imagination, brightneſs, life, ſublimity, and elegance, but the niceſt art and fineſt judgment, ſo as to ſeem luxuriant, and not to be ſo: and under the ſhew of tranſgreſſing all laws, to preſerve them.

LYSIMACHIA, willow-herb, in botany.

M.

M, A liquid conſonant, and the twelfth letter of the Engliſh alphabet.

Its ſound is always the ſame; it ſuffers no conſonant after it in the beginning of words and ſyllables, unleſs in ſome derived from the Greek, as *amneſty*, &c.

M, in preſcription, ſignifies a maniple, or handful; and at the end of a receipt it imports *miſce*, or mingle.

M, in aſtronomy, &c. denotes meridional, ſouthern; ſometimes *meridies*, or mid-day.

M, in law, the brand of a perſon convicted of manſlaughter, and admitted to the benefit of the clergy; it is burnt on the brawn of the left thumb.

M, among the ancients, a numeral letter, ſignifying one thouſand; and with a daſh added at the top of it, as $\bar{M}$, it ſignified a thouſand times a thouſand.

MACAO, or MACAW, in ornithology, a name given to the larger ſpecies of parrots with very long tails.

MACARONIC, or MACARONIAN, an apellation given to a burleſque kind of poetry, made up of a jumble of words of different languages, and words of the vulgar tongue latinized.

MACCABEES, two apocryphal books of Scripture; ſo called from Judas Mattathias, ſurnamed Maccabeus. The firſt book of the Maccabees is an excellent hiſtory, and comes neareſt the ſtyle and manner of the ſacred hiſtorians of any extant: it contains the hiſtory of forty years from the reign of Antiochus Epiphanes to the death of Simon the high-prieſt; that is, from the year of the world 3829 to 3869, 131 years before Chriſt. The ſecond book of the Maccabees begins with two epiſtles ſent from the Jews of Jeruſalem to the Jews of Egypt and Alexandria, exhorting them to obſerve the feaſt of the dedication of the new altar, erected by Judas on his purifying the temple. After theſe epiſtles follows the preface of the author to his hiſtory, which is an abridgement of a larger work, compoſed by one Jaſon, a Jew of Cyrene, who wrote the hiſtory of Judas Maccabeus and his brethren, and the wars againſt Antiochus Epiphanes, and Eupator his ſon. The ſecond book falls infinitely ſhort of the accuracy and excellency of the firſt. It contains a hiſtory of about fifteen years, from the execution of Heliodorus's commiſſion, who was ſent by Seleucus to fetch away the treaſures of the temple, to the victory obtained by Judas Maccabeus over Nicanor; that is, from the year of the world 3828, to the year 3843, 147 years before Chriſt.

MACE, *Macis*, the ſecond coat or covering of the nutmeg. It is a thin and flat membranous ſubſtance, of an oleaginous nature, a yellowiſh colour, extremely fragrant, and of a pleaſant, but acrid and oleaginous taſte. It is to be choſen new, not dry, and of a fragrant ſmell, tough, oleaginous, and of a good yellow. Mace is carminative, ſtomachic, and aſtringent; it poſſeſſes all the virtues of the nutmeg, if taken in a larger doſe; and people have become delirious, for ſome hours, after an immoderate uſe of it. The oils of mace and nutmeg, whether prepared by diſtillation or by expreſſion, are ſo much of the ſame nature, that they may be indiſcriminately uſed for each other. They give eaſe in colics, and often in nephritic caſes, taken internally from one drop to five or ſix, of the diſtilled oil, or an unequal quantity of the expreſſed; and externally, they are of uſe to rub upon paralytic limbs; they alſo aſſiſt digeſtion, and will often ſtop vomitings and hiccoughs, only by being rubbed on the region of the ſtomach. The nurſes have a cuſtom of applying oil of mace, by expreſſion, to children's navels to eaſe their gripes, and that often with ſucceſs; and we are aſſured by authors of credit, that rubbed on the temples, it promotes ſleep. The oils, by diſtillation, are very properly added to the ſtronger cathartics in form of pills, and prove excellent correctives.

MACERATION, *Maceratio*, in pharmacy, an infuſion or ſoaking of ingredients in water, &c. in order either to ſoften them or extract their virtues. It is a kind of digeſtion.

MACHINE, *Machina*, whatever hath force ſufficient to raiſe or ſtop the motion of a heavy body. Machines are either ſimple or compound; the ſimple ones are the ſeven mechanical powers, viz. the lever, balance, pully, axis and wheel, wedge, ſcrew, and inclined plane. If the given power, ſays Mr. Emerſon, is not able to overcome the given reſiſtance when directly applied, that is, when the power applied is leſs than the weight or reſiſtance given; then the thing is to be performed by the help of a machine made with levers, wheels, pullies, ſcrews, &c. ſo adjuſted, that when the weight and power are put in motion on the machine, the velocity of the power may be at leaſt ſo much greater than that of the weight, as the weight and friction of the machine, taken together, is greater than the power. For on this principle depends the mechaniſm or contrivance of mechanical engines uſed to draw or raiſe heavy bodies, or overcome any other force; the whole deſign of theſe being to give ſuch a velocity to the power in reſpect of the weight, as that the momentum of the power may exceed the momentum of the weight. For if machines are ſo contrived, that the velocity of the agent and reſiſtant are reciprocally as their forces, the agent will juſt ſuſtain the reſiſtant; but with a greater degree of velocity will overcome it. So that if the exceſs of velocity in the power is ſo great as to overcome all that reſiſtance which commonly ariſes from the friction or attrition of contiguous bodies, as they ſlide by one another, or from the coheſion of bodies that are to be ſeparated, or from the weights of bodies to be raiſed; the exceſs of the force remaining, after all theſe reſiſtances are overcome, will produce an acceleration of motion proportional thereto, as well in the parts of the machine, as in the reſiſting body. Now how a machine may be contrived to perform this to the beſt advantage will appear from the following rules.

1. Having aſſigned the proportion of your power and the weight to be raiſed, the next thing is to conſider how to combine levers, wheels, pullies, &c. ſo that working together, they may be able to give a velocity to the power, which ſhall be to that of the weight ſomething greater than in the proportion of the weight to the power. This done you muſt eſtimate your quantity of friction, and if the velocity of the power be to that of the weight ſtill in a greater proportion than the weight and friction taken together is to the power; then your machine will be able to raiſe the weight. And note, this proportion muſt be ſo much greater, as you would have your engine work faſter.

2. But the proportion of the velocity

of the power and weight muſt not be made too great neither: for it is a fault to give a machine too much power, as well as too little. For if the power can raiſe the weight and overcome the reſiſtance, and the engine perform its proper effect in a convenient time, and works well, it is ſufficient for the end propoſed. And it is in vain to make more additions to the engine to increaſe the power any further; for that would not only be a needleſs expence, but the engine would loſe time in working.

3. As to the power applied to work the engine, it may be either a living power, as men, horſes, &c. or an artificial power, as a ſpring, &c. or a natural power, as wind, water, fire, weights, &c.

When the quantity of the power is known, it matters not as to the effect what kind of power it is; for the ſame quantity of any ſort will produce the ſame effect. And different ſorts of powers may be applied in an equal quantity, a great variety of ways.

The moſt eaſy power applied to a machine is weight, if it be capable of effecting the thing deſigned. If not, then wind, water, &c. if that can conveniently be had, and without much expence.

A ſpring is alſo a convenient moving power for ſeveral machines. But it never acts equally as a weight does; but is ſtronger when much bent, than when but a little bent, and that in proportion to the degree of bending, or the diſtance it is forced to. But ſprings grow weaker by often bending, or remaining long bent; yet they recover part of their ſtrength by lying unbent.

The natural powers wind and water may be applied with vaſt advantage to the working of great engines, when managed with ſkill and judgment. The due application of theſe has much abridged the labours of men. For there is ſcarce any labour to be performed, but an ingenious artificer can tell how to apply theſe powers to execute his deſign, and anſwer his purpoſe. For any conſtant motion being given, it may, by a due application, be made to produce any other motions we deſire. Therefore theſe powers are the moſt eaſy and uſeful, and of the greateſt benefit to mankind. Beſides, they coſt nothing, nor require any repetition or renewing, like a weight or a ſpring, which require to be wound up. When theſe cannot be had, or cannot ſerve our end, we have recourſe to ſome living power, as men, horſes, &c.

4. Men may apply their ſtrength ſeveral ways in working a machine. A man of ordinary ſtrength, turning a roller by the handle, can act for a whole day, againſt a reſiſtance equal to thirty pounds weight. And if he works ten hours in a day, he will raiſe a weight of thirty pounds three and a half feet in a ſecond; or if the weight be greater, he will raiſe it ſo much leſs in proportion.

But a man may act, for a ſmall time, againſt a reſiſtance of fifty pounds or more.

If two men work at a windlaſs, or roller, they can more eaſily draw up ſeventy pounds than one man can thirty pounds, provided the elbow of one of the handles be at right angles to that of the other. And with a fly or heavy wheel applied to it, a man may do one-third part more work; and for a little while act with a force, or overcome a continual reſiſtance, of eighty pounds, and work a whole day when the reſiſtance is but forty pounds.

Men uſed to carrying, ſuch as porters, will carry ſome one hundred and fifty pounds, others two hundred or two hundred and fifty pounds, according to their ſtrength. A man can draw but about ſeventy or eighty pounds horizontally: for he can but apply about half his weight.

If the weight of a man be one hundred and forty pounds, he can act with no greater force in thruſting horizontally, at the height of his ſhoulders, than twenty-ſeven pounds.

A horſe draws to greateſt advantage, when the line of direction is a little elevated above the horizon, and the power acts againſt his breaſt; and can draw two hundred pounds for eight hours in a day, at two miles and a half an hour. If he draws two hundred and forty pounds, he can work but ſix hours, and not quite ſo faſt; and in both caſes, if he carries ſome weight, he will draw better than if he carried none. And this is the weight a horſe is ſuppoſed to be able to draw over a pully out of a well. In a cart, a horſe may draw one thouſand pounds. The moſt force a horſe can exert is, when he draws ſomething above a horizontal poſition.

The worſt way of applying the ſtrength of a horſe, is to make him carry or draw up a hill. And three men, with one hundred pounds on their backs, will climb up a ſteep hill faſter than a horſe with three hundred pounds.

A round walk for a horſe to draw in, at a mill, &c. ſhould not be leſs than forty feet diameter.

5. Every machine ought to be made of as few parts, and thoſe as ſimple as poſſible, to anſwer its purpoſe; not only becauſe the expence of making and repairing will be leſs, but it will alſo be leſs liable to any diſorder. And it is needleſs to do a thing with many, which may be done with fewer parts.

6. If a weight is to be raiſed but a very little way, the lever is the moſt ſimple, eaſy, and ready machine. Or if the weight be very great, the common ſcrew is moſt proper. But if the weight is to be raiſed a great way, the wheel and axle is a proper power, and blocks and pullies are eaſier ſtill; and the ſame may be done by help of the perpetual ſcrew.

Great wheels to be wrought by men or cattle are of moſt uſe and convenience, when their axles are perpendicular to the horizon; but if by water, &c. then it is beſt to have their axles horizontal.

7. As to the combination of ſimple machines together, to make a compound one; though the lever when ſimple cannot raiſe a weight to any great height, and in this caſe is of little ſervice; yet it is of great uſe when compounded with others. Thus the ſpokes of a great wheel are all levers perpetually acting; and a beam fixed to the axis to draw the wheel about by men, or horſes, is a lever. The lever alſo may be combined with the ſcrew, but not conveniently with pullies or with the wedge. The wheel and axle is combined with great advantage with pullies. The ſcrew is not well combined with pullies; but the perpetual ſcrew combined with the wheel is very ſerviceable. The wedge cannot be combined with any other mechanical power; and it only performs its effect by percuſſion; but this force of percuſſion may be increaſed by engines.

Pullies may be combined with pullies, and wheels with wheels. Therefore if any ſingle wheel ſhould be too large, and take up too much room, it may be divided into two or three more wheels and trundles, or wheels and pinions, as in clockwork; ſo as to have the ſame power, and perform the ſame effect.

In wheels with teeth, the number of teeth which play together in two wheels ought to be prime to each other, that the ſame teeth may not meet at every revolution; for when different teeth meet, they by degrees wear themſelves into a proper figure: therefore they ſhould be contrived that the ſame teeth meet as ſeldom as poſſible.

8. The ſtrength of every part of the machine ought to be made proportional to the ſtreſs it is to bear. And therefore let every lever be made ſo much ſtronger, as its length and the weight it is to ſupport is greater; and let its ſtrength diminiſh proportionally from the fulcrum, or point where the greateſt ſtreſs is, to each end. The axles of wheels and pullies muſt be ſo much ſtronger as they are to bear greater weight. The teeth of wheels, and the wheels themſelves, which act with greater force, muſt be proportionally ſtronger. And in any combination of wheels and axles, make their ſtrength diminiſh gradually from the weight to the power, ſo that the ſtrength of every part be reciprocally as the velocity it has. The ſtrength of ropes muſt be according to their tenſion, and that is as the ſquares of their diameters. And in general whatever parts a machine is compoſed of, the ſtrength of every particular part of it muſt be adjuſted to the ſtreſs upon it; therefore in ſquare beams the cubes of the diameters muſt be proportional to the ſtreſs they bear. And let no part be ſtronger or bigger than is neceſſary for the ſtreſs upon it: not only for the eaſe and well going of the machine, but for diminiſhing the friction. For all ſuperfluous matter in any part of it, is nothing but a dead weight upon the machine, and ſerves for nothing but to clog its motion. And he is by no means a perfect mechanic, that does not only adjuſt the ſtrength to the ſtreſs; but alſo contrives all the parts to laſt equally well, that the whole machine may wear together.

9. To have the friction as little as poſſible, the machine ought to be made of the feweſt and ſimpleſt parts. The diameters of the wheels and pullies ought to be large, and the diameters of the arbors or ſpindles they run on, as ſmall as can be conſiſtent with their ſtrength. All ropes and cords muſt be as pliable as poſſible, and for that end rubbed with tar or greaſe; the teeth of wheels muſt be made to fit and fill up the openings; and cut into the form of epicycloids. All the axles, where the motion is, and all teeth where they work, and all parts that in working rub upon one another, muſt be made ſmooth; and when the machine goes, muſt be oiled or greaſed.

10. When any motion is to be long

continued, contrive the power to move or act always one way, if it can be done. For this is better and eaſier performed than when the motion is interrupted, and the power is forced to move firſt one way and then another; becauſe every new change of motion requires a new additional force to effect it. Beſides, a body in motion cannot ſuddenly receive a contrary motion, without great violence. And the moving any part of the machine contrary ways by turns, with ſudden jerks, tends only to ſhake the machine to pieces.

11. In a machine that moves always one way, endeavour to have the motion uniform.

12. But when the nature of the thing requires that a motion is to be ſuddenly communicated to a body, or ſuddenly ſtopped; to prevent any damage or violence to the engine, by a ſudden jolt, let the force act againſt ſome ſpring, or beam of wood, which may ſupply the place of a ſpring.

13. In regard to the ſize of the machine; let it be made as large as it can conveniently. The greater the machine the exacter it will work, and perform all its motions the better. For there will always be ſome errors in the making, as well as in the materials; and conſequently in the working of the machine. The reſiſtance of the medium in ſome machines has a ſenſible effect. But all theſe mechanical errors bear a leſs proportion to the motion of the machine in great machines than in little ones; being nearly reciprocally as their diameters; ſuppoſing they are made of the ſame matter, and with the ſame accuracy, and are equally well finiſhed: therefore in a ſmall machine they are more ſenſible; but in a great one almoſt vaniſh: therefore great machines will anſwer better than ſmaller, in all reſpects, except in ſtrength. For the greater the machine the weaker it is, and leſs able to reſiſt any violence.

14. For engines that go by water, it is neceſſary to meaſure the velocity and force of the water. To get the velocity, drop in pieces of ſticks &c. and obſerve how far they are carried in a ſecond, or any given time.

But if it flows through a hole in a reſervoir, or ſtanding receptacle of water, the velocity will be found from the depth of the hole below the ſurface.

Thus let $s = 16\frac{1}{12}$ feet, v = velocity of the fluid per ſecond. B = the area of the hole. H = height of the water; all in feet. Then the velocity $v = \sqrt{2sH}$; and its force = the weight of the quantity $\frac{vv}{2s}$B or H B of water, or $= \frac{62\frac{1}{2}}{112}$ H B hundred weight: becauſe a cubic foot is $= 62\frac{1}{2}$ ℔. avoird. Alſo a hogſhead is about $8\frac{1}{2}$ feet, or 531 ℔. and a ton is four hogſheads.

When you have but a ſmall quantity of water, you muſt contrive it to fall as high as you can, to have the greater velocity, and conſequently more force upon the engine.

15. If water is to be conveyed through pipes to a great diſtance, and the deſcent be but ſmall; ſo much larger pipes muſt be uſed, becauſe the water will come ſlow.

Water ſhould not be driven through pipes faſter than four feet per ſecond, by reaſon of the friction of the tubes. Nor ſhould it be much wire-drawn, that is, ſqueezed through ſmaller pipes: for that creates a reſiſtance, as the water-way is leſs in narrow pipes.

16. When any work is to be performed by a water wheel moved by the water running under it and ſtriking the paddles or ladle boards, the channel it moves in ought to be ſomething wider than the hole of the adjutage, and ſo cloſe to the floats on every ſide, as to let little or no water paſs; and when paſt the wheel, to open a little that the water may ſpread. It is of no advantage to have a great number of floats or paddles, for theſe paſt the perpendicular are reſiſted by the back-water, and thoſe before it are ſtruck obliquely. The greateſt effect that ſuch a wheel can perform, in communicating any motion, is when the paddles of the wheel move with $\frac{1}{2}$ the velocity of the water; in which caſe, the force upon the paddles is $\frac{4}{9}$ only; ſuppoſing the abſolute force of the water againſt the paddle, when the wheel ſtands ſtill, to be 1. So that the utmoſt motion which the wheel can generate, is but $\frac{4}{27}$ of that which the force of the water againſt the paddles at reſt, would produce. This is when the wheel is at the beſt; but oftentimes far leſs is done. *Emerſon's Mechanics.*

MACHINERY, in epic and dramatic poetry, is when the poet introduces the uſe of machines, or ſome ſuppernatural being upon the ſtage, in order to ſolve ſome difficulty, or to perform ſome exploit out of the reach of human power.

The ancient dramatic poets never made uſe of machines, unleſs where there was an abſolute neceſſity for ſo doing. It is quite otherwiſe with epic poets, who introduce machines in every part of their poems; ſo that nothing is done without the intervention of the gods. In Milton's Paradiſe Loſt, by far the greater part of the actors are ſupernatural perſonages; Homer and Virgil do nothing without them; and in Voltaire's Henriade, the poet has made excellent uſe of St. Louis. As to the manner in which theſe machines ſhould act, it is ſometimes inviſibly, by ſimple inſpirations and ſuggeſtions; ſometimes by actually appearing under ſome human form; and, laſtly, by means of dreams and oracles, which partake of the other two. However, all theſe ſhould be ſo managed as to keep within the bounds of probability.

MACKREL, in ichthyology, a ſpecies of ſcomber, with five pinnules at the extremity of the back, and a ſpine at the anus.

MACULÆ, in aſtronomy, dark ſpots appearing on the luminous faces of the ſun, moon, and even ſome of the planets; in which ſenſe they ſtand contradiſtinguiſhed from faculæ. Theſe ſpots are moſt numerous and eaſily obſerved in the ſun. It is not uncommon to ſee them in various forms, magnitudes, and numbers, moving over the ſun's diſk. They were firſt of all diſcovered by the Lyncean aſtronomer Galileo, in the year 1610, ſoon after he had finiſhed his new invented teleſcope.

What theſe ſpots are, it is preſumed, no body can tell; but they ſeem to be rather thin ſubſtances than ſolid bodies, becauſe they loſe the appearance of ſolidity in going off the diſk of the ſun: they reſemble ſomething of the nature of ſcum or ſcoria, ſwimming on the ſurface, which are generated and diſſolved by cauſes little known to us: but whatever theſe ſolar ſpots are, it is certain they are produced from cauſes very inconſtant and irregular; for Scheiner ſays he frequently ſaw fifty at once, but for twenty years after ſcarce any appeared. And in this century the ſpots were very frequent and numerous till the year 1741, when, for three years ſucceſſively, very few appeared; and now, ſince the year 1744, they have again appeared as uſual.

Theſe maculæ are not peculiar to the ſun; they have been obſerved in all the planets. Thus Venus was obſerved to have ſeveral by ſignior Bianchini, in the year 1726. As in Venus, ſo in Mars both dark and bright ſpots have been obſerved, firſt by Galileo, and afterwards by Caſſini, &c. Jupiter has had his ſpots obſervable ever ſince the invention and uſe of large teleſcopes. Saturn, by reaſon of his great diſtance on one hand, and Mercury, by reaſon of his ſmallneſs and vicinity to the ſun on the other, have not as yet had any ſpots diſcovered on their ſurfaces, and conſequently nothing in relation to their diurnal motions and inclinations of their axis to the planes of their orbits can be known, which circumſtances are determined in all the other planets, as well as in the ſun, by means of theſe maculæ.

The ſpots, or maculæ, obſervable on the moon's ſurface, ſeem to be only cavities or large caverns, on which the ſun ſhining very obliquely, and touching only their upper edge with his light, the deeper places remain without light; but as the ſun riſes higher upon them, they receive more light, and the ſhadow or dark parts grow ſmaller and ſhorter, till the ſun comes at laſt to ſhine directly upon them, and then the whole cavity will be illuſtrated: but the dark, duſky ſpots, which continue always the ſame, are ſuppoſed to proceed from a kind of matter or ſoil which reflects leſs light than that of the other regions. See *Moon*.

MADDER, in commerce, is one of the aſperifolious ſtellated plants, or of thoſe which have rough narrow leaves ſet in form of a ſtar at the joints of the ſtalks. The root, which is the only part made uſe of, is long, ſlender, of a red colour both on the outſide and within, excepting a whitiſh pith, which runs along the middle.

This plant was formerly cultivated among us in quantity for the uſe of the dyers, who for ſome time paſt have been ſupplied from Holland and Zealand: its culture is now again ſet on foot in this kingdom, under the laudable encouragement of a public ſociety. There are ſome exotic plants, which degenerate in our climate, as alkanet; but this is not the caſe with madder, that produced in England being equal to the beſt that is brought from abroad.

The method of cultivating this uſeful plant, as practiſed by the Dutch, is as follows.

In autumn they plow the land, where they intend to plant madder in the ſpring, and lay it in high ridges, that the froſt may mellow it; in March they plow it again; and at this ſeaſon they work it very deep, laying it up in ridges eighteen inches aſunder, and about a foot high; then about the beginning of April, when the madder will begin to ſhoot out of the ground, they open the earth about their old roots, and take off all the ſide-ſhoots, which extend themſelves horizontally, juſt under the ſurface of the ground, preſerving as much root to them as poſſible: theſe they tranſplant immediately upon the tops of the new ridges, at about a foot apart, obſerving always to do this when there are ſome ſhowers, becauſe then the plants will take root in a few days, and will require no water.

When the plants are growing, they carefully keep the ground hoed, to prevent the weeds from coming up between them; for if they are ſmothered by weeds, eſpecially when young, it will either deſtroy or weaken them ſo much, that they ſeldom do well after. In theſe ridges they let the plants remain two ſeaſons, during which time they keep the ground very clean; and at Michaelmas, when the tops of the plants are decayed, they take up the roots and dry them for ſale.

This is what I could learn of their method of cultivating this plant; to which I will ſubjoin a few obſervations of my own, which I have ſince made upon the culture of madder in England. And, firſt, I find there is no neceſſity of laying the ground up in ridges in England, as is practiſed by the Dutch, eſpecially in dry land, becauſe the places where I ſaw it, were very wet land, which is often floated in winter; ſo that, if the plants were not elevated upon ridges, their roots would rot in winter. Secondly, they ſhould be planted at a greater diſtance in England; the rows ſhould be at leaſt three feet diſtant, and the plants eighteen inches aſunder in the rows: for as they extend themſelves pretty far under ground, ſo where they are planted too near, their roots will not have room to grow. And thirdly, I find, that if all the horizontal roots are deſtroyed from time to time, as they are produced, it will cauſe the large downright roots to be much bigger, in which the goodneſs of this commodity chiefly conſiſts: for if the upper roots are ſuffered to remain, they will draw off the principal nouriſhment from the downright roots, as I have experienced; for I planted a few roots upon the ſame ſoil and ſituation, which were of equal ſtrength, and rooted equally well: half of theſe I hoed round, and cut off the horizontal roots, and the other half I permitted the horizontal roots to remain on; and when I took them all up, thoſe which I had hoed about, and kept clear from horizontal roots, were almoſt as large again as the other, and the roots were double the weight; which plainly proves it neceſſary to cut off thoſe ſuperfluous roots: ſo that where this plant is cultivated in quantity, it will be an excellent method to uſe the hoeing-plough, to ſtir the ground, and deſtroy the weeds; for with this inſtrument a large quantity of ground may be kept clean at a ſmall expence; and as this will ſtir the ground much deeper than a common hoe, it will cut the ſuperficial roots, and thereby improve the principal roots.

The crop of madder ſhould be ſhifted into freſh land; for the ground which has had one crop, will not be fit to receive another in leſs than four years; during which time any other annual crop may be cultivated on the land. *Miller.*

When the madder roots are arrived at perfection, they are taken up, well dried, and then reduced to powder by a mill.

Madder root gives out its colour both to water and to rectified ſpirit: the watery tincture is of a dark dull red, the ſpirituous of a deep bright one. Taken internally it tinges the urine red. In the Philoſophical Tranſactions, and in the Memoirs of the French Academy, there are accounts of its producing a like effect upon the bones of animals, to whom it had been given with their food: all the bones, particularly the more ſolid ones, were changed, both externally and internally to a deep red, but neither the cartilaginous or fleſhy parts ſuffered any alteration. Some of theſe bones, macerated in water for many weeks together, and afterwards ſteeped and boiled in ſpirit of wine, loſt nothing of their colour, nor communicated any tinge to the liquors. Madder imparts to woollen cloth, prepared with alum and tartar, a very durable, though not a very beautiful red dye. As it is the cheapeſt of all the red drugs that give a durable colour, it is the principal one commonly made uſe of for ordinary ſtuffs. Sometimes its dye is heightened by the addition of Brazil wood, and ſometimes it is employed in conjunction with the dearer reds, as cochineal, for demi-ſcarlets and demi-crimſons.

The charge of erecting a kiln for drying, and a mill for pulverizing the madder roots, induced Mr. Dambourney to try how far the green root would anſwer the purpoſes of dyeing without any previous preparation. “I therefore, ſays this ingenious gentleman, waſhed them well, that no earth might remain upon them: but having myſelf experienced that, as Mr. Du Hamel obſerves, this root loſes ſeven eights of its weight when it is dried ſufficiently to be reduced into powder, I judged that I muſt proportion my quantity accordingly. I therefore put into a quantity of liquor which would have required a pound of powdered madder, eight pounds of freſh roots bruiſed in a mortar, and with this I dyed ſome cotton, in the uſual way. When the dyeing was finiſhed, I found that the liquor was ſtill over-charged, though the cotton had imbibed ſo deep a dye as to require two boilings to bring it down to the uſual colour: upon which I repeated the experiment with ſix pounds, and afterwards with four pounds, and I found that this laſt proportion of undried roots is that which gives a colour equal to what is extracted from a pound of dried and powdered madder. One half of the quantity of roots commonly uſed may therefore be ſaved by dyeing with them when they are freſh dug: but tho' this is a great ſaving, it is not the only one.

“1. There is no need to build kilns or ſheds for drying the roots in changeable weather.

“2. One is exempted from the inconveniencies of a too haſty or too ſlow drying, either of which is equally hurtful to the quality of the madder.

“3. The waſte occaſioned by the peeling, garbling, winnowing, &c. of the roots, in the doing of which many if not all of the ſmall ones, that are not for example thicker than ſtraws, are ſeparated with the refuſe parts, and thereby generally loſt, is hereby ſaved.

“4. The expence of grinding is ſaved, together with the waſte and fraud which may be committed at the mill; and likewiſe the inconvenience of waiting till the mill is at liberty, which is of no ſmall conſequence in places where there are not mills appropriated to the grinding of madder only.

“5. Laſtly, the roots thus uſed do not evaporate or ferment, as the powdered madder always does if it be not ſpeedily uſed.

“All theſe advantages put together may be deemed equivalent to a ſaving of five eights in the quantity. The planter who knows how to dye may reap the benefit of them the moment that his roots are large enough to be taken up: the dyers by trade will by degrees be ſenſible of the advantage, and ſhare the profit with the planter, when the madder grounds are near them: they will even find themſelves under a neceſſity of ſo doing whenever this method ſhall become general, and this will be the means of rendering it ſuch; for as there is no particular time to be waited for in order to the madder's acquiring maturity, after it has been planted eighteen months; the huſbandman who carries a parcel of freſh roots to market will be ſure of ſelling them in that ſtate, and the dyer may buy them daily, in proportion to the quantity he wants; or he may agree with the planter for ſuch and ſuch quantities to be delivered to him at ſuch and ſuch times.—I have moreover experienced that theſe roots may be kept freſh during ſeveral months, by laying them in a hole three feet deep, in alternate layers of roots and of earth.”

MADNESS, *Mania*, a moſt dreadful kind of delirium without a fever. Melancholy and madneſs are diſeaſes nearly allied; for they have both the ſame origin, that is, an exceſſive congeſtion of blood in the brain: they only differ in degree, and with reſpect to the time of invaſion; melancholy being the primary diſeaſe, of which madneſs is the augmentation. Both theſe diſorders ſuppoſe a weakneſs of the brain, which may proceed from an hereditary diſpoſition; from violent diſorders of the mind, eſpecially long continued grief, anxiety, dread, and terror; from cloſe ſtudy and intenſe application of mind to one ſubject; from narcotic and ſtupifying medicines; from previous diſeaſes, eſpecially acute fevers; from a ſuppreſſion of hæmorrhages, and omitting cuſtomary bleeding; from exceſſive cold, eſpecially of the lower parts, which forces the blood to the lungs, heart, and brain; and from violent anger, which will change melancholy into madneſs. It is evident that the blood of maniac patients is black, and hotter than in the natural ſtate; that the ſerum ſeparates more ſlowly and in a leſs quantity than in healthy perſons; and that the excrements are hard, of a dark red or greyiſh colour, and the urine light and thin. The antecedent ſigns of madneſs are, a redneſs and ſuffuſion of the eyes with blood, a tremulous and inconſtant vibration of the eye-lids, a change of diſpoſition and behaviour; ſupercilious looks, a haughty carriage, diſdainful expreſſions, a grinding of the teeth, and unaccountable malice to particular perſons: alſo little ſleep, a violent headach, quickneſs of hearing, incredible ſtrength, inſenſibility of cold, and in women, an accumulation of blood in the breaſts, in the increaſe of this diſorder. Diſeaſes of the mind have ſomething in them ſo different from other diſorders, that they ſometimes remit for a long time, but return at certain periods, eſpecially about the ſolſtices. It may likewiſe be obſerved, that the raving fits of mad people, which keep the lunar periods, are generally accompanied with epileptic ſymptoms. This diſeaſe, when it is primary or idiopathic, is worſe than the ſymptomatic, that accompanies the hyſteric or hypochondriac paſſion; which is eaſily cured, as is that alſo which ſucceeds intermitting fevers, a ſuppreſſion of the menſes, of the lochia, of the hæmorrhoids, or which is occaſioned by narcotics. When the paroxyſms are ſlight in the idiopathic kind, the cure is not very difficult; but if it is inveterate, and has but ſhort remiſſions, it is almoſt incurable. Sometimes this diſeaſe terminates by critical excretions of blood from the noſe, uterus, or anus; ſometimes diarrhœas and dyſenteries will terminate theſe diſorders; and puſtules, ulcers, and the itch have alſo done the ſame. As to the cure, bleeding is the moſt efficacious of all remedies; and where there is a redundance of thick grumous blood, a vein is firſt to be opened in the foot, a few days after in the arm; then in the jugular vein, or one in the noſtrils with a ſtraw; and laſt of all the frontal vein, with a blunt lancet, for fear of hurting the pericranium. Tepid baths made of rain or river water are alſo convenient; and before the patient enters the bath, he ſhould have cold water poured on his head. Purgatives are likewiſe uſeful; but the lenient are to be preferred to the draſtic: thus, manna, caſſia, rhubarb, cream of tartar, or tartar vitriolate, are moſt convenient, when the diſeaſe ariſes from the hypochondriac paſſion, a ſtagnation of blood in the inteſtines, or in the ramifications of the vena portæ, eſpecially when taken in decoctions and infuſions at repeated intervals, ſo as to operate in an alterative manner. Some kinds of mineral waters are alſo highly efficacious in melancholy and madneſs: but nothing is better for removing the cauſe of theſe diſorders, than depurated mercury. Particular medicines among vegetables, are balm, betony, vervain, brook-lime, ſage, worm-blood, flowers of St. John's wort, of the lime-tree, and camphire: from animals, aſs's blood: among minerals, ſteel, cinnabar, ſugar of lead, and the calx and tincture of ſilver. Hoffman is of opinion, that nothing better deſerves the name of a ſpecific in theſe diſeaſes than motion and exerciſe, when duly proportioned to the ſtrength of the body. Sedative medicines are good, but not opiates and narcotics, for theſe induce ſtupidity and folly: thoſe that are good in an epilepſy will be here beneficial, ſuch as caſtor, ſhavings of hartſhorn, the roots and ſeeds of piony, antiepileptic powders, the valerian root, flowers of the lily of the valley, and of the lime-tree. Boerhaave ſays, the principal remedy for raving madneſs is dipping in the ſea, and keeping the patient there as long as he can bear it. As a high degree of the itch has terminated theſe diſorders, it may be proper to make iſſues in the back; but bliſters, contrary to Shaw's opinion, are prejudicial; for by ſtimulating the nervous membranes and the dura mater, they increaſe the ſpaſmodic ſtricture, and the motion of the groſs and bilious blood through the head and the other parts of the body. As to diet, the patient ſhould carefully abſtain from ſalt and ſmoked fleſh, whether beef or pork; from ſhell-fiſh; from fiſh of a heavy and noxious quality; from aliments prepared with onions and garlic: all which generate a thick blood. He ſhould in general eat no more than is ſufficient to ſupport nature. Small beer, or cold pure water, are the beſt drink; but ſweet and ſtrong wines are highly prejudicial, as is alſo exceſſive ſmoking tobacco. Change of air and travelling may be beneficial.

For the madneſs proceeding from the bite of a mad dog, ſee *Hydrophobia*.

MADREPORA, in botany, a genus of ſubmarine plants, of a ſtony hardneſs, but ſomewhat approaching to the form of other vegetables. It is compoſed of a main ſtem, and ſubdivided into a number of branches, which are full of holes or pores, in a radiated form.

MADRIGAL, a ſhort amorous poem, compoſed of a number of free and unequal verſes, neither confined to the regularity of a ſonnet, nor to the point of an epigram, but only conſiſting of ſome tender and delicate thought, expreſſed with a beautiful, noble, and elegant ſimplicity. The madrigal is uſually conſidered as the ſhorteſt of all the leſſer kinds of poetry, except the epigram: it will admit of fewer verſes than either the ſonnet or the roundelay; no other rule is regarded in mingling the rhimes, and the different kinds of verſe, but the fancy and convenience of the author: however, this poem allows of leſs licence than many others, both with reſpect to rhime, meaſure, and delicacy of expreſſion.

* MÆCENAS (Caius Cilnius) the favourite of Auguſtus, and the protector of learned and ingenious men, was deſcended from the ancient kings of Tuſcany; he was extravagantly fond of eaſe and pleaſure, and yet when affairs required it, applied to buſineſs with ſurprizing wiſdom and activity. Auguſtus had no favourite who was dearer, or more agreeable to him. Seneca ſays, that Mæcenas's ſtyle might have been given as a model of eloquence, if his good fortune had not rendered it too ſoft and effeminate. It is ſaid, that when Auguſtus was one day diſtributing juſtice, and having already condemned a great number of criminals, Mæcenas not being able to approach him, threw his tablets at him, on which theſe words were written with his own hand: "Riſe thou executioner, "and be gone." At which liberty Auguſtus was not offended, but immediately left the place. Mæcenas zealouſly protected the poets, particularly Virgil and Horace, whom he placed among the number of his friends, one of whom dedicated his Georgics to him, and the other his Odes. This protection of the learned, has chiefly immortalized his name, and cauſed that of Mæcenas to be given to the patrons of men of letters. He was contented with the rank of a knight, and would not be raiſed to a higher degree of honour. He died eight years before the Chriſtian æra, after having compoſed ſeveral works, which are now loſt.

MAGAZINE, a place in which ſtores are kept of arms, ammunition, proviſions, &c.

MAGAZINE *of a Ship of War*, a ſmall ſtore-houſe in the after or fore-part of a ſhip's hold, where the gun-powder is ſtowed, and filled into cartridges, bombs, grenadoes, &c. by the gunner and his mates, ready for engagement.

MAGAZINE, a name given to ſeveral periodical pamphlets, moſt of which are publiſhed the firſt of every month. The word *Magazine*, in French, ſignifies a warehouſe or repoſitory for a variety of articles; whence the term is applied to theſe monthly publications, from their great variety of miſcellaneous articles, unconnected with each other.

MAGDALEN, or *Nuns of St. Magdalen*, an order of religious in the Romiſh church, dedicated to St. Mary Magdalen, and ſometimes called *Magdalenettes*. Theſe chiefly conſiſt of courtezans, who quitting their profeſſion, devote the reſt of their lives to repentance and mortification.

MAGI, or MAGIANS, an ancient religious ſect in Perſia, and other Eaſtern countries, who maintained, that there were two principles, the one the cauſe of all good, the other the cauſe of all evil; and abominating the adoration of images, worſhipped God only by fire, which they looked upon as the brighteſt and moſt glorious ſymbol of Oromaſdes, or the good god, as darkneſs is the trueſt ſymbol of Arimanius, or the evil god. This religion was reformed by Zoroaſter, who maintained that there was one ſupreme independent Being, and under him two principles or angels, one the angel of goodneſs and light, and the other of evil and darkneſs: that there is a perpetual ſtruggle between them, which ſhall laſt to the end of the world; that then the angel of darkneſs and his diſciples ſhall go into a world of their own, where they ſhall be puniſhed in everlaſting darkneſs; and the angel of light and his diſciples ſhall alſo go into a world of their own, where they ſhall be rewarded in everlaſting light. The prieſts of the Magi were the moſt ſkilful mathematicians and philoſophers of the ages in which they lived, inſomuch that a learned man and a Magian became equivalent terms.

This ſect ſtill ſubſiſts in Perſia under the denomination of Gaurs, where they watch the ſacred fire with the greateſt care, and never ſuffer it to be extinguiſhed.

MAGIC originally ſignified only the knowledge of the more ſublime parts of philoſophy; but as the Magi likewiſe profeſſed aſtrology, divination, and ſorcery, the term Magic became odious, being uſed to ſignify an unlawful diabolical kind of ſcience, acquired by the aſſiſtance of the devil and departed ſouls.

Natural magic is only the application of natural philoſophy to the production of ſurpriſing, but yet natural effects.

MAGIC LANTERN, in optics. See *Lantern*.

MAGIC SQUARE, a ſquare figure formed of a ſeries of numbers in arithmetical progreſſion, diſpoſed into ſuch parallel and equal ranks, as that the ſums of each row, as well diagonally as laterally, ſhall be equal.

MAGISTERY, in chemiſtry, commonly denotes a white powder, prepared of certain ſubſtances by precipitation These ſubſtances are either of the mineral kind, as earth, ſtones, &c. or vegetables, as herbs, raiſins, &c. or animals, as bones, horns, and cruſtaceous parts.

MAGISTERY *of Biſmuth* is made by diſſolving biſmuth in ſpirit of nitre, and pouring on it ſalt water, which precipitates the magiſtery to the bottom.

MAGISTERY *of Lead* is made by diſſolving ſaccharum ſaturni in diſtilled vinegar, and then precipitating it with oil of tartar per deliquium.

MAGISTERY *of Reſins*, or reſinous extracts of ſcammony, jalap, &c. are made by diſſolving the matter in ſpirit of wine, and precipitating it with water.

MAGISTRATE, a juſtice of the peace, or any public officer, to whom the executive power of the law is committed, either wholly or in part.

MAGNA CHARTA, the great charter of the liberties of England, and the baſis of our laws and privileges. This charter may be ſaid to derive its origin from king Edward the Confeſſor, who granted ſeveral privileges to the church and ſtate, by charter: theſe were alſo granted and confirmed by king Henry I. by a celebrated great charter, now loſt; but which was confirmed or re-enacted by king Henry II. and king John. Henry III. the ſucceſſor of this laſt prince, after having cauſed twelve men to make enquiry into the liberties of England in the reign of Henry I. granted a new charter, which was the ſame as the preſent Magna Charta: this he ſeveral times confirmed, and as often broke; till in the thirty-ſeventh year of his reign, he went to Weſtminſter-hall, and there, in the preſence of the nobility and biſhops, who held lighted candles in their hands, Magna Charta was read, the king all the while holding his hand to his breaſt, and at laſt ſolemnly ſwearing faithfully and inviolably to obſerve all the things therein contained, &c. then the biſhops extinguiſhing the candles, and throwing them on the ground, they all cried out, "Thus "let him be extinguiſhed, and ſtink in "hell, who violates this charter." It is obſerved, notwithſtanding the ſolemnity of this confirmation, king Henry, the very next year, again invaded the rights of his people, till the barons entered into a war againſt him, when, after various ſucceſs, he confirmed this charter, and the charter of the foreſt, in the fifty-ſecond year of his reign. This excellent charter, ſo equitable and beneficial to the ſubject, is the moſt ancient written law in the kingdom: by the 25th Edw. I. it is ordained, that it ſhall be taken as the common law; and by the 43 Edw. III. all ſtatutes made againſt it are declared to be void.

MAGNESIA ALBA, in the materia medica, a fine white earth, ſoluble readily in all acids, the vitriolic as well as the others, into a bitter purgative liquor; and not convertible by fire into quicklime. This earth has not hitherto been found naturally pure or in a ſeparate ſtate: it was ſeveral years a celebrated ſecret in the hands of ſome particular perſons abroad, till its preparation was made public by Lanciſi in the year 1717, and afterwards by Hoffman in 1722. It was then extracted from the mother-ley, or the liquor which remains after the cryſtallization of rough nitre; either by precipitation with a ſolution of fixed alcaline ſalt, or by evaporating the liquor, and calcining the dry reſiduum, ſo as to diſſipate the acids, by which the earth had been made diſſoluble.

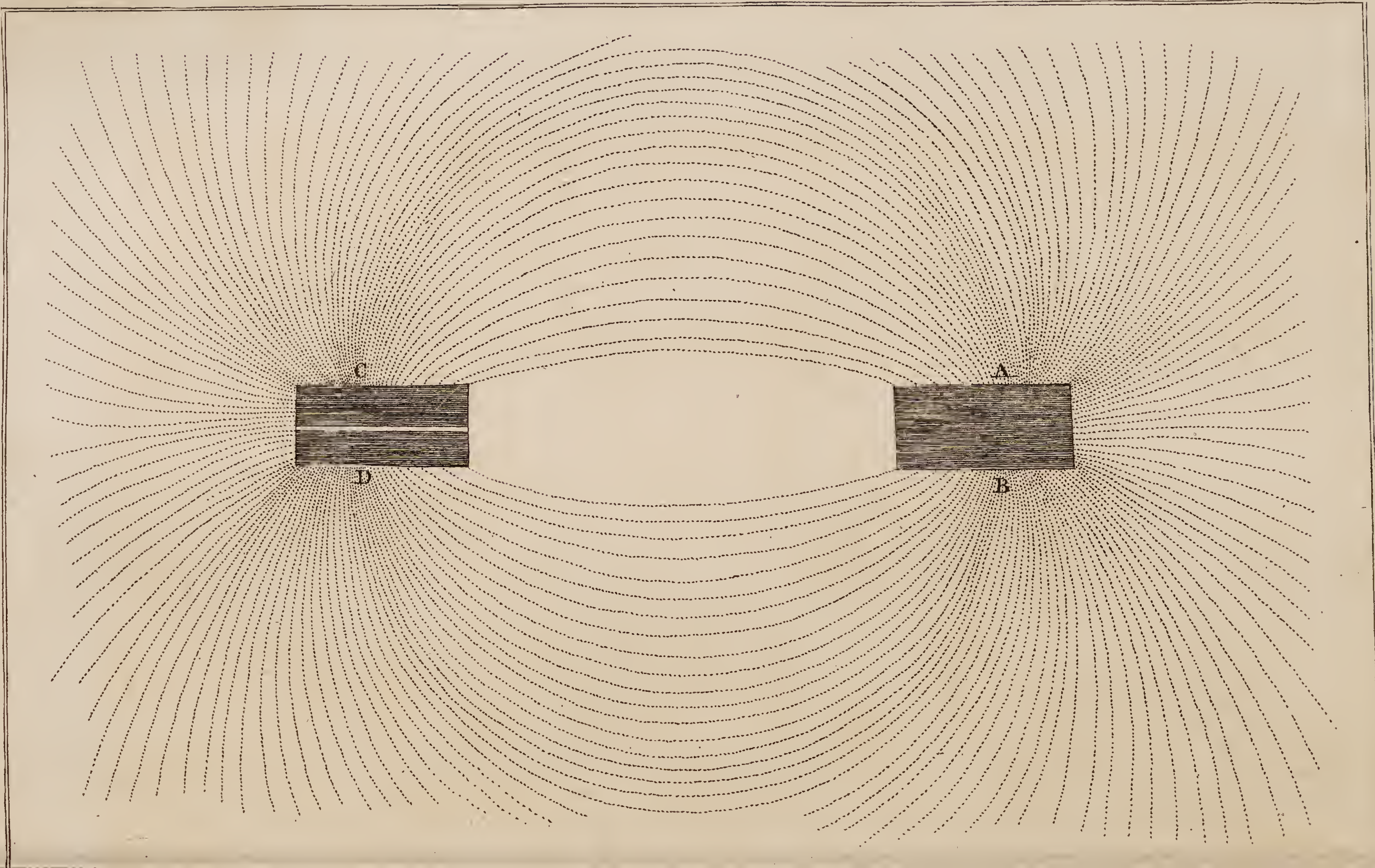
The true magneſia is obtained in great purity from a filtered ſolution of ſal catharticus amarus; by adding a filtered ſolution of any alcaline ſalt, till a freſh addition produces no further milkineſs. The white earth, which precipitates, is to be waſhed by repeated affuſions of hot as well as cold water, and then dried for uſe.

The magneſia is recommended by Hoffman as an uſeful anti-acid, a ſafe and inoffenſive laxative in doſes of a dram or two, and a diaphoretic and diuretic, when given in ſmaller doſes, as fifteen or twenty grains. Since this time, it has of late come into great eſteem among us, particularly in heart-burns, and for preventing or removing the many diſorders which children are thrown into from a redundance of acid humours in the firſt paſſages. It is preferred, on account of its laxative quality, to the teſtaceous and other abſorbent earths, which, unleſs gentle purgatives are given occaſionally to carry them off, are apt to lodge in the body, and occaſion a coſtiveneſs very detrimental to infants. It muſt be obſerved, however, that it is not the magneſia itſelf which proves laxative, but the ſaline

compound

Plate XXX.

Facing Magnet.



compound reſulting from its coalition with acids: if there are no acid juices in the ſtomach to diſſolve it, it has no ſenſible operation, and in ſuch caſes it may be rendered purgative by drinking any kind of acidulous liquors after it. All the other known ſoluble earths yield with acids, not purgative, but more or leſs aſtringent compounds.

MAGNET, *Magnes*, loadſtone, in natural hiſtory, a very rich iron ore, found in large detached maſſes, of a duſky iron grey, often tinged with browniſh or reddiſh, and when broken appearing ſomething like the common emery, but leſs ſparkling. It is very heavy, conſiderably hard, of a perfectly irregular and uneven ſurface, and of a firm ſtructure, but uſually with ſome porous irregularities within. It is found in England, and all other places where there are iron mines.

The word is derived from a city in Lydia, called Magneſia, where this ſtone was firſt found.

This famous ſtone was well known to the ancients, but ſcarce any other property of it than that of its attracting iron, as we may ſee in Pliny, b. 36. c. 16. However, it appears that they knew ſomething of its communicating virtue, particularly Plato, when deſcribing that famous chain of iron rings put together, the firſt of which was held by a magnet; and Lucretius makes mention of the ſame magnetic quality operating through the hardeſt bodies.

But we do not ſee by any paſſage in their writings that they knew any thing of the directive virtue of the loadſtone: and we are utterly in the dark as to the time this diſcovery was firſt made, as alſo when it was applied to the uſe of navigation. It however appears that this diſcovery was made before the year one thouſand one hundred and eighty.

The primary properties of the loadſtone are the following: 1. Every loadſtone has two points, called poles, which emit the magnetic virtue. 2. One of theſe poles attracts, the other repels iron, but no other body. 3. This virtue, being the third ſpecies of attraction, is communicated to iron very copiouſly by the touch, which renders it ſtrongly magnetic. 4. A piece of iron ſo touched by the loadſtone, and nicely ſuſpended on a ſharp point, will be determined to ſettle itſelf in a direction nearly north and ſouth. 5. The end of the needle touched by the ſouth pole of the ſtone will point northward; and the contrary. 6. Needles touched by the ſtone will dip below the horizon, or be directed on the touched part to a point within the earth's ſurface: this is called the dipping needle. 7. This virtue may alſo be communicated to iron by a ſtrong attrition all one way. 8. Iron rods or bars acquire a magnetic virtue by ſtanding long in one poſition. 9. Fire totally deſtroys this virtue, by making the ſtone or iron red hot. 10. This power is exerted ſenſibly to the diſtance of ſeveral feet. 11. It is ſenſibly continued through the ſubſtance of ſeveral contiguous bodies or pieces of iron. 12. It pervades the pores of the hardeſt body. And, 13. Equally attracts the iron in vacuo as in open air. Theſe, and many more, are the properties of a body, not more wonderful than uſeful to mankind. See the articles *Pole*, *Needle*, *Variation*, &c.

There is a very curious method of rendering viſible the directions which the magnetic effluvia take in going out of the ſtone: thus, let A B, C D, (plate XXX. fig. 1.) be the poles of the ſtone; about every ſide gently ſtrew ſome ſteel-filings on a ſheet of white paper; theſe ſmall particles will be affected by the effluvia of the ſtone, and ſo poſited as to ſhow the courſe and direction of the magnetic particles on every part: thus, in the middle of each pole, between A B, and C D, it appears to go nearly ſtraight on; towards the ſides it proceeds in lines more and more curved, till at laſt the curved lines from both poles meeting and coinciding, form numberleſs curves on each ſide, nearly of a circular figure, as repreſented in the diagram. This ſeems to ſhew that the magnetic virtue emitted from each pole, circulates to, and enters the other.

The cauſe of the variation of the needle has remained hitherto without any demonſtrative diſcovery; yet ſince its declination, and inclination, or dipping, (ſee *Dipping Needle*,) do both of them manifeſtly indicate the cauſe to be ſomewhere in the earth, it has given occaſion to philoſophy to frame hypotheſes for a ſolution, which makes the earth a large or general magnet or loadſtone, of which all the leſſer ones are but ſo many parts or fragments, and being poſſeſſed of the ſame virtue, will, when left to move freely, have the ſame diſpoſition and ſimilarity of poſition, and other circumſtances.

The moſt conſiderable of theſe hypotheſes is that of the late ſagacious Dr.

Halley, which is this; the globe of the earth is one great magnet, having four magnetical poles or points of attraction, near each pole of the equator two; and that in thoſe parts of the world which lie near adjacent to any one of thoſe magnetical poles, the needle is chiefly governed thereby, the neareſt pole being always predominant over the more remote one. Of the north poles, that which is neareſt to us he ſuppoſes to be in the meridian of the land's end, which governs the variations in European Tartary, and the North Sea; the other he places in a meridian paſſing through California, about fifteen degrees from the north pole of the world, which governs the needle in North America, and the oceans on either ſide. In like manner he accounts for the variations in the ſouthern hemiſphere. See *Philoſophical Tranſactions*, No. 148.

The variation of the needle from the north and ſouth points of the horizon, not being the ſame but variable in different years, and in a diverſe manner, in different parts of the earth, made the doctor farther conjecture, that two of the magnetic poles were fixed, and two moveable; and in order to make this out, he ſuppoſes the external part of the earth to be a ſhell or cortex, containing within it a magnetic moveable nucleus of a globular form, whoſe center of gravity is the ſame with that of the earth, and moveable about the ſame axis.

Now, if the motions of both the ſhell and nucleus were the ſame, the poles of each would always have the ſame poſition to each other; but he ſuppoſes the motion of the nucleus to be a very ſmall matter leſs than that of the ſhell, which yet is ſcarce ſenſible in 365 revolutions; and, if ſo, the magnetic poles of the nucleus will by ſlow degrees change their diſtance from the magnetic poles of the ſhell, and thus cauſe a variation in that needle's variation, which is governed by the moveable pole of the nucleus, while that variation which reſpects the fixed poles of the magnetic ſhell remains more conſtant; as in Hudſon's-bay the change is not obſerved to be near ſo faſt as in theſe parts of Europe.

The variation of the needle has within a century paſt undergone a remarkable alteration; for at London it was obſerved by Mr. Burrows in the year 1580, to be 11° 15′ eaſt. After that, in the year 1622, it was obſerved by Mr. Gunter to be but 6° eaſt. In the year 1634, Mr. Gellibrand obſerved it to be 4° 5′ eaſt. In 1657, it was obſerved by Mr. Bond to be nothing at all, that is, the needle placed itſelf in the ſituation S, N, and pointed directly to the north. After this, in the year 1672, Dr. Halley obſerved it to be 2° 30′ weſtward; and again, in the year 1692, he found it 6° weſt. Since then, in the year 1722, Mr. Graham, by moſt accurate experiments, found it to be 14° 13′, and at preſent it is between 19 and 20 degrees; and in ſome places it has been found to be 23° weſtward.

The variation of the declination and inclination of the needle is variable, and ſubject to no regular computation. What the quantity of both ſorts of variation is in the ſeveral parts of the world, is ſhewn in Dr. Halley's map of the world, improved from the obſervations of Mr. Pound.

The law of magnetic attraction ſeems not yet aſcertained. Sir Iſaac Newton ſuppoſes it to decreaſe nearly in the triplicate ratio of the diſtance; but Dr. Helſham, trying the experiment by his loadſtone, found it to be as the ſquares of the diſtances inverſely; and Mr. Martin aſſures us, that the power of his loadſtone decreaſes in a different manner from either, it being in the ſeſquiplicate ratio of the diſtances inverſely: for exactneſs, he made a ſquare bar of iron juſt a quarter of an inch thick, and then provided three pieces of wood of the ſame form and thickneſs exactly; then poiſing the loadſtone very nicely at the end of a ballance, which would turn with leſs than a grain, he placed under it the iron with firſt one piece of wood, then two pieces; and laſtly, all three pieces upon it; by which means the ſteel-points of the pole were kept at $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, of an inch from the iron; and in thoſe diſtances the weights put into the oppoſite ſcale, to raiſe the loadſtone from the wood, which is touched while the beam was horizontal, were as follow:

Diſt.	Gr.	Rat of Sq.	Rat. of Cub.	S.Rat.
$\frac{1}{4}$	156	156	56	156
$\frac{1}{2}$	58	39	19	56
$\frac{3}{4}$	28	17	6	30

Whence it appears that the number of grains to counteract the power of the loadſtone in theſe diſtances, approach very near, and are almoſt the ſame with thoſe which are in the ſeſquiplicate ratio, but are widely different from thoſe which are in the duplicate ratio; and this experiment Mr. Martin tried ſeveral times for each diſtance, with ſcarce any variation in the ſucceſs.

The power or force of magnets is generally greater in ſmall than in large ones, in proportion to their bulk. It is very rare that very large ones will take up more than three or four times their own weight, but a ſmall one is but tolerably good that will take up no more than eight, ten, or twelve times its weight.

Iron bars, by ſtanding long in the ſame poſition, will acquire the magnetic virtue to a ſurpriſing degree. There have been ſeen one about 10 feet long and three inches thick, ſupporting the ſummer-beam of a room, which has been able to turn the needle at 8 or 10 feet diſtance, and exceeded a loadſtone of 3½ pounds weight. From the middle point upwards it was a north-pole, and downwards a ſouth-pole; and Mr. Martin ſays he has now by him an iron rod, which has ſeveral poles or parts which change the poſition of the magnetic needle.

The poles of a loadſtone are not to be looked upon as two ſuch invariable points as never to change place; for according to Mr. Boyle, the poles of a little bit of magnet may be changed by applying them to the more vigorous poles of another, as has been confirmed by Dr. Knight, who can change at pleaſure the poles of a natural magnet, by means of iron-bars magnetically impregnated. Upon gently cutting a magnet through the middle of its axis, each piece becomes a compleat magnet; for the parts that were contiguous under the equator before the magnet was cut, become poles, and even poles of different names; ſo that each piece may become equally a north or ſouth-pole, according as the ſection was made nearer the ſouth or north pole of the large magnet; and the ſame thing would happen in any other ſub-diviſions. But upon cutting a magnet longitudinally, there will then be four poles, the ſame as before the cutting; only that there ſhall be formed in each piece a new axis parallel to the former, and more or leſs in the inſide of the magnet. We find by experience, that two magnets attract each other by the poles of different denominations; whereas, on the contrary, the two ſimilar poles repel each other.

By a great number of experiments we alſo learn that the form of a magnet in attraction and repulſion reaches ſometimes further, ſometimes not ſo far. The activity of ſome reaches to 14 feet, and that of others is inſenſible within eight or nine inches; the ſphere of activity is greater on certain days than on others, without its ever appearing that the heat, moiſture, or drought of the air contributes any thing to this effect.

It has been found that the poles of the ſame denomination in magnets, and the caſe is the ſame in bodies magnetically impregnated, repel each other, while they are at a mean diſtance from the limits of their ſphere of activity, and on the contrary attract each other in the point of contact; there are other magnets that repel each other with greater vigour towards the middle of their ſphere of activity than near the point of contact, where it ſeems the repulſion diminiſhes: yet Mr. Mitchel pretends to have obſerved, by means of artificial magnets, that the two poles attract and repel equally at the ſame diſtances, and in all kinds of direction; that the error of thoſe who believed the repulſion to be weaker than the attraction was owing to this, that magnets and magnetical bodies are always weakened, by bringing the poles of the ſame denomination near each other; whereas their virtue is increaſed, when the poles of different denominations are brought near each other; that this augmentation or diminution of force, occaſioned by the proximity of two magnets, becomes inſenſible, in proportion as they are removed from each other; for which reaſon we ſee that at a great diſtance attraction and repulſion approach more and more to an equality, and are reciprocally removed from equality, in proportion as the reciprocal diſtance of two magnets diminiſhes; ſo that if a magnet, which is pretty ſtrong and pretty nigh to it, impair conſiderably a weak magnet that approaches it by the poles of the ſame denomination, it ſhall happen that the pole of this laſt ſhall be deſtroyed and changed into a pole of a different denomination, by means of which repulſion will be converted into attraction. In ſhort, by many experiments, Mr. Mitchel was convinced, that attraction and repulſion increaſe and decreaſe in the inverſe ratio of the ſquares of the reſpective diſtances of the two poles.

All theſe effects of natural repulſion and attraction find no obſtacle from ſolids or fluids, the wind, flame, or the current of waters; and they are as lively in common air, as in that which is rarefied or condenſed in the air-pump.

The magnet attracts iron with ſtill greater force than it does another magnet;

and this attraction extends to all bodies that contain ferrugineous particles.

No ſolid or fluid body can any way hinder the mutual action of iron and a magnet upon each other, unleſs it be iron itſelf: nor does the exceſſive heat of iron diminiſh theſe effects, though the exceſſive heat of a magnet diminiſh its virtue, at leaſt for a time.

The attraction of a magnet newly dug out of a mine, makes it to take up only very ſmall pieces of iron; for which reaſon it muſt be armed, in order to augment its force: beſides this, the arming it unites, directs, and condenſes its virtue towards its poles, and cauſes its emanations to tend entirely towards the maſs which is laid thereon.

When you have determined where the poles are, which you may exactly find by placing over the magnet a very fine ſhort needle, which will ſtand perpendicular over each pole, and no where elſe; then you muſt file it very ſmooth at its poles, ſo that the axis ſhall have the greateſt length, yet without too much diminiſhing its other dimenſions. To determine the proportions of the armour, the greater the force of the magnet is, the thicker muſt the pieces of ſteel be of which it is to conſiſt; and for this purpoſe try the magnet with ſeveral ſteel-bars, and the greater weight it takes up with a ſteel-bar on, that bar is to be its armour. Though the attraction of an armed magnet appears conſiderable, yet very weak cauſes deſtroy its effect in a moment; for inſtance, when an oblong piece of iron is attracted under the pole of an excellent magnet, and the pole of a different denomination in another magnet that is weaker is preſented to the lower end of this piece of iron, this weaker magnet will very ſtrongly take away the iron. In like manner, if the point of a needle be put under one of the poles of a magnet ſo as to hang by its head, and preſent to this head any bar of iron by its upper end, the needle will immediately quit the magnet, in order to adhere to the bar; but if the needle hold by its head to the pole of the magnet, then neither the bar of iron, nor a weak magnet ſhall diſengage it; and there is another ſlight circumſtance which makes an armed and vigorous loadſtone appear to have no more force, and that is the too great length of the iron which is to be raiſed by one of the poles.

In order to communicate the magnetic virtue effectually, theſe methods are made uſe of. 1. It has been diſcovered that iron rubbed upon one of the poles of the magnet, acquires a great deal more virtue than from any other part thereof, and this is more conſiderable from an armed than a naked magnet. 2. The more gently the iron is preſſed, and the more it is preſſed againſt the pole, the more magnetical it becomes. 3. It is more convenient to impregnate iron on one pole than on both ſucceſſively. 4. The iron is much better impregnated by preſſing it uniformly, and in the ſame direction, according to its length, than by rubbing it by the middle; and the extremity which touches the pole laſt, retains the moſt virtue. 5. A piece of poliſhed ſteel, or a bit of pointed iron, receives more virtue than a ſimple piece of iron of the ſame figure; and *cæteris paribus*, a piece of iron that is long, ſmall, and pointed, is more ſtrongly impregnated than that of any other form.

The communication of the magnetic virtue does not ſenſibly impair that of the loadſtone; though it has been obſerved, that ſome magnets have communicated a greater power to iron to raiſe weights, than they had themſelves, but without impairing their own force, or adding any thing to the weight of the iron.

As ſeveral ways have been propoſed for recovering the decayed virtue of loadſtones, but to little purpoſe, eſpecially that of keeping the ſtone conſtantly in ſteel filings, we ſhall here relate the remarkable experiment of Mr. Haac for this purpoſe, as it was attended with great ſucceſs. This gentleman had a magnet weighing fourteen ounces and a half, armed, which would take up ſixteen times its own weight; but having laid it by for ſome years unuſed, it loſt one fourth part of its virtue, or more; whereupon he hung as much weight to the ſtone as it would ſuſtain, and ſo left it for ſome weeks; then returning, he applied more weight to the former, which it very eaſily bore, and then repeating the addition of more weight at ſeveral periods, in the ſpace of about two years, he found that the ſtone had not only recovered its former ſtrength, but increaſed it ſo far, that it would now take up more than twenty pounds, whereas at firſt it would not take up fifteen.

Artificial MAGNET, a ſteel bar impregnated with the virtues of the magnet, ſo as to poſſeſs all the properties, and be uſed inſtead of the natural loadſtone.

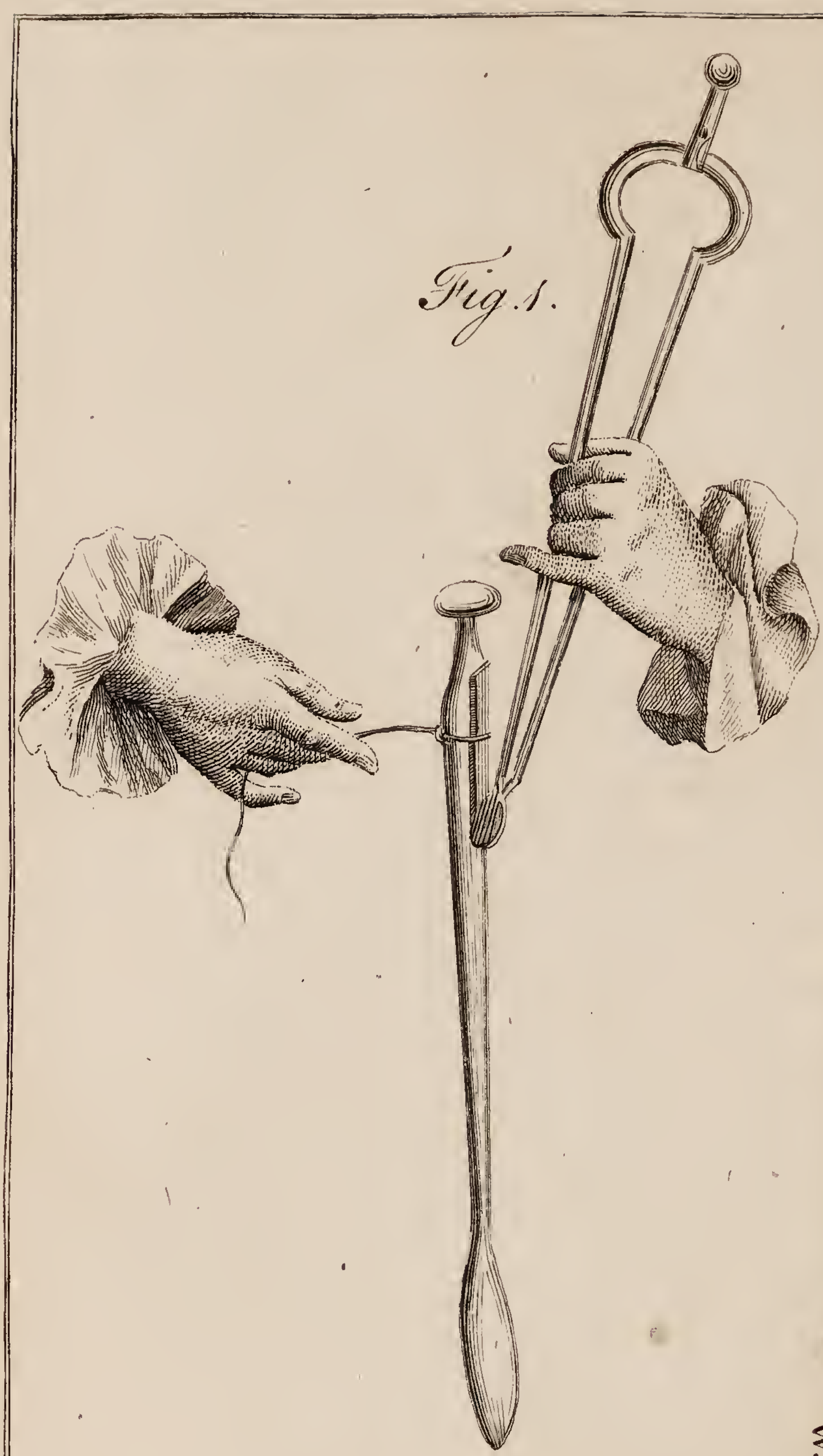


Fig. 1.

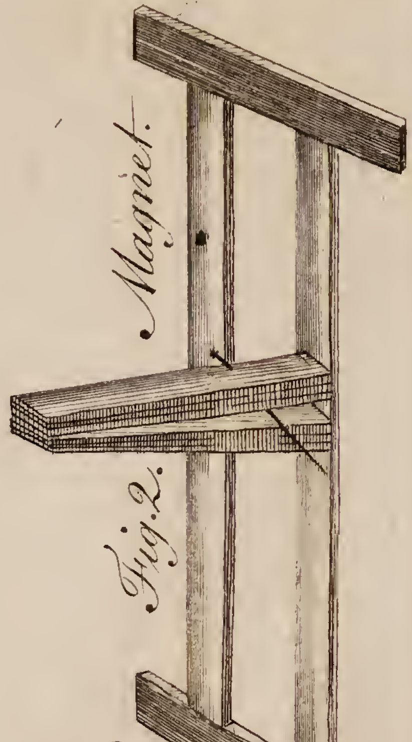


Fig. 2. Magnet.

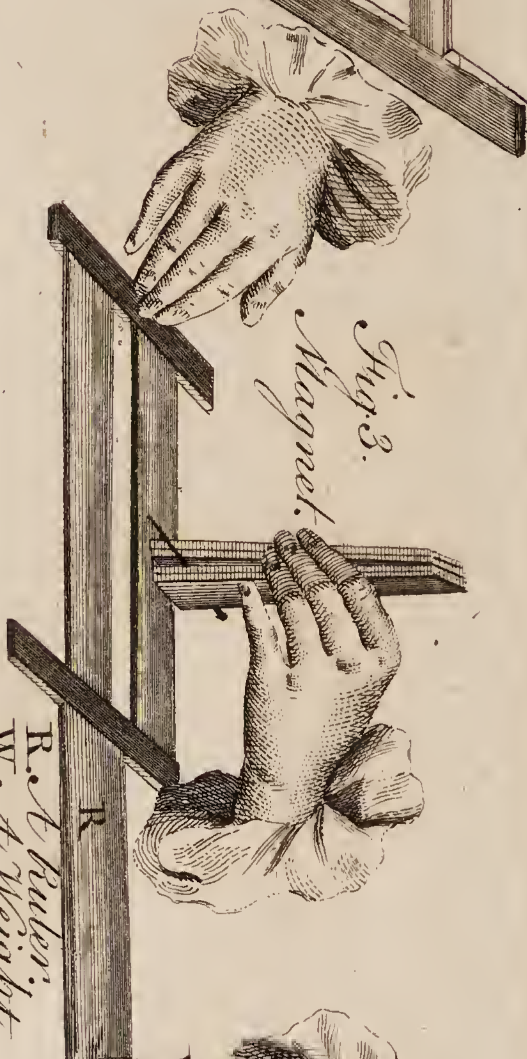
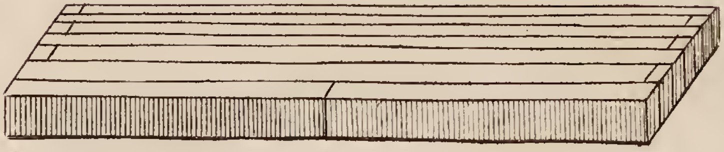


Fig. 3. Magnet.

R. A Ruler.
W. A Weight.

Fig. 5, Magnet.



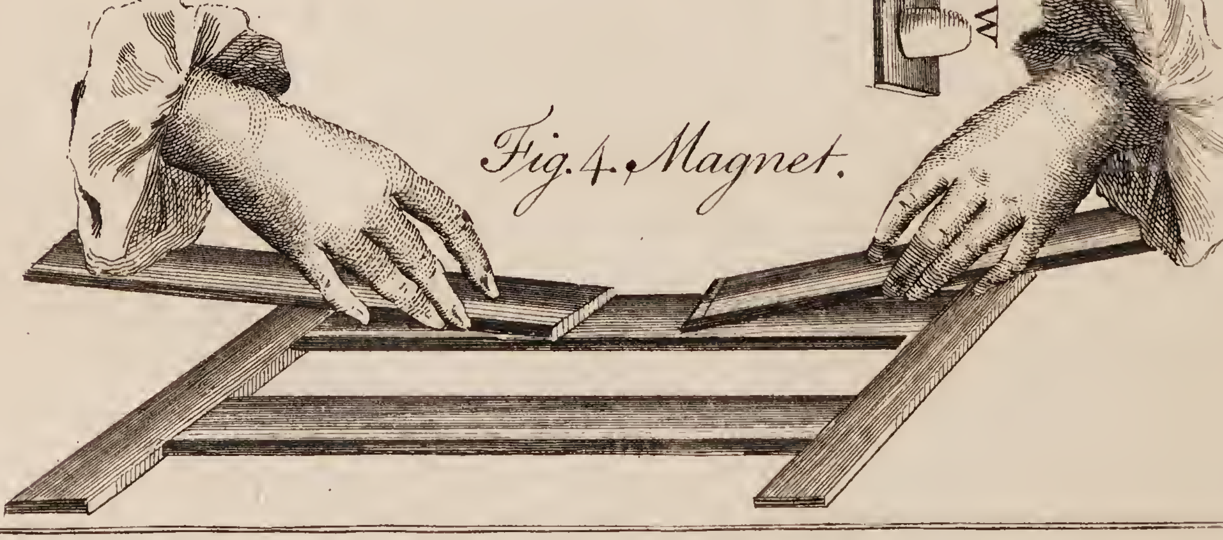


Fig. 4, Magnet.

There have been ſeveral methods propoſed for making artificial magnets, but none has yet met with greater ſucceſs than that of Mr. Canton's, a gentleman well known to the learned world, and to whom we owe this diſcovery.

Procure a dozen of bars, ſix of ſoft ſteel, each three inches long, one quarter of an inch broad, and one twentieth of an inch thick; with two pieces of iron, each half the length of one of the bars, but of the ſame breadth and thickneſs: alſo ſix pieces of hard ſteel, each five inches and a half long, half an inch broad, and three twentieths of an inch thick; with two pieces of iron of half the length, but the whole breadth and thickneſs of one of the hard bars; and let all the bars be marked with a line quite round them at one end. Then take an iron poker and tongs, (pl. XXXI. fig. 1) or two bars of iron, the larger they are and the longer they have been uſed, the better; and fixing the poker upright between the knees, hold to it, near the top, one of the ſoft bars, having its marked end downwards, by a piece of ſewing ſilk, which muſt be pulled tight by the left hand, that the bar may not ſlide: then graſping the tongs with the right hand, a little below the middle, and holding them nearly in a vertical poſition, let the bar be ſtroked by the lower end from the bottom to the top, about ten times on each ſide, which will give it a magnetic power ſufficient to lift a ſmall key at the marked end; which end, if the bar was ſuſpended on a point, would turn towards the north, and is therefore called the north pole, and the unmarked end is, for the ſame reaſon, called the ſouth pole. Four of the ſoft bars being impregnated after this manner, lay the two (fig. 2.) parallel to each other, at the diſtance of one fourth of an inch, between the two pieces of iron belonging to them, a north and a ſouth pole againſt each piece of iron: then take two of the four bars already made magnetical, and place them together ſo as to make a double bar in thickneſs, the north pole of one even with the ſouth pole of the other; and the remaining two being put to theſe, one on each ſide, ſo as to have two north and two ſouth poles together; ſeparate the north from the ſouth poles at one end by a large pin, and place them perpendicularly with that end downward on the middle of one of the parallel bars, the two north poles towards its ſouth, and the two ſouth poles towards its north end: ſlide them backward and forward three or four times the whole length of the bar, and removing them from the middle of this, place them on the middle of the other bar, as before directed, and go over that in the ſame manner; then turn both the bars the other ſide upwards, and repeat the former operation: this being done, take the two from between the pieces of iron, and placing the two outermoſt of the touching bars in their room, let the other two be the outermoſt of the four to touch theſe with; and this proceſs being repeated till each pair of bars have been touched three or four times over, which will give them a conſiderable magnetic power, put the half dozen together after the manner of the four, (fig. 2.) and touch with them two pair of the hard bars placed between their irons, at the diſtance of about half an inch from each other; then lay the ſoft bars aſide, and with the four hard ones, let the other two be impregnated, (fig. 3) holding the touching bars apart at the lower end near two tenths of an inch, to which diſtance let them be ſeparated after they are ſet on the parallel bar, and brought together again before they are taken off; this being obſerved, proceed according to the method deſcribed above, till each pair have been touched two or three times over; but as this vertical way of touching a bar will not give it quite ſo much of the magnetic virtue as it will receive, let each pair be now touched once or twice over in their parallel poſition between the irons, (fig. 4.) with two of the bars held horizontally, or nearly ſo, by drawing at the ſame time the north of one from the middle over the ſouth end, and the ſouth of the other from the middle over the north end of a parallel bar; then bringing them to the middle again, without touching the parallel bar, give three or four of theſe horizontal ſtrokes to each ſide. The horizontal touch, after the vertical, will make the bars as ſtrong as they poſſibly can be made, as appears by their not receiving any additional ſtrength, when the vertical touch is given by a great number of bars, and the horizontal by thoſe of a ſuperior magnetic power. This whole proceſs may be gone through in about half an hour; and each of the large bars, if well hardened, may be made to lift twenty-eight troy ounces, and ſometimes more. And when theſe bars are thus impregnated, they will give to an hard bar of the ſame ſize its full virtue in leſs than two minutes: and therefore will anſwer all the purpoſes of magnetiſm in navigation and experimental philoſophy much better than the loadſtone, which is known not to have a ſufficient power to impregnate hard bars. The half dozen being put into a caſe (fig. 5.) in ſuch a manner as that two poles of the ſame denomination may not be together, and their irons with them as one bar, they will retain the virtues they have received: but if their power ſhould, by making experiments, be ever ſo far impaired, it may be reſtored without any foreign aſſiſtance in a few minutes. And if, out of curioſity, a much larger ſet of bars ſhould be required, theſe will communicate to them a ſufficient power to proceed with, and they may in a ſhort time by the ſame method, be brought to their full ſtrength.

MAGNIFYING, in philoſophy, the making of objects appear larger than they would otherwiſe do; whence convex lenſes, which have the power of doing this, are called magnifying glaſſes; and of ſuch glaſſes are microſcopes conſtructed.

MAGNITUDE, whatever is made up of parts locally extended, or that hath ſeveral dimenſions; as a line, ſurface, ſolid, &c.

The apparent magnitude of a body is that meaſured by the viſual angle, formed by rays drawn from its extremes to the center of the eye; ſo that whatever things are ſeen under the ſame or equal angles, appear equal; and *vice verſa*.

MAGNOLIA, the laurel-leaved tulip tree, in botany.

Could this beautiful tree be ſo far naturalized as to endure the cold of our ſevere winters, it would make one of the greateſt ornaments of our gardens. It is propagated by ſeeds, which ſhould be procured from Carolina.

* MAHOMET, or MAHOMED, a falſe prophet, and the founder of the Mahometan religion, was born at Mecca, the 5th of May, 571, of poor parents, but of an illuſtrious family. Abdallah, his father, was an idolater, and his mother was called Emina. He loſt his father and mother when very young, and was educated by his uncle Abutaleb, who placed him in the ſervice of Cadigha, the widow of a rich merchant. This woman became in love with Mahomet, and married him when he was twenty-five years of age. He had three ſons, who died young; and four daughters, who were advantageouſly married. Being ſubject to the epilepſy, and willing to conceal this infirmity from his wife, he made her believe that he fell into thoſe convulſions merely becauſe he could not ſupport the ſight of the angel Gabriel, who came from heaven to inform him of ſeveral things concerning religion. He alſo made the ſame pretence to his domeſtics and friends, who ſoon publiſhed abroad that Mahomet was a great prophet, by which means he obtained ſeveral diſciples. The magiſtrates of Mecca, alarmed at the diſcourſes, and, fearing leſt the novelties ſhould excite a ſedition, reſolved to have him diſpatched; but Mahomet being informed of their deſign made his eſcape: from which time the Mahometans reckon the epocha of the Hegira, an Arabic word, which ſignifies flight. This period is reckoned from the 16th of July, 622. Mahomet retired to Medina with a few friends, but was ſoon joined by a great number of his diſciples. He then diſcovered to them his deſigns, which were, to extend his dominion and religion by force of arms. And to inſpire them with the greateſt courage and intrepidity, he told them, that God having pre-determined the time of every man s life, thoſe who were ſlain in battle would have died that very moment had they ſtayed at home; but as they died fighting for the faith, they gained the crown of martyrdom, and the rewards due to it in paradiſe. His ſoldiers being thus inſpired with an enthuſiaſtic ardor, he eaſily conquered ſeveral tribes of Arabs, took their cities, and brought them under his government and laws. Giving his great ſtandard to his uncle, Hamza, he ſent him againſt the caravans of the country, and had all the ſucceſs he could wiſh; for with 319 men he defeated a caravan of 1000 Karaſhites, and obtained a conſiderable booty, with the loſs of only 40 men. On Mahomet's having taken Cabar, a city inhabited by Arabs of the Jewiſh religion, he took up his quarters in the houſe of one of its principal inhabitants, whoſe daughter preparing a ſhoulder of mutton for his ſupper, poiſoned it; on eating it, one of his companions fell down dead on the ſpot; and though Mahomet, not liking the taſte, had ſpit out what he had taken into his mouth, yet he was never well after this ſupper, and a few years after died of it. The young woman being aſked her reaſon for doing it, anſwered,

that ſhe was reſolved to try whether he was a prophet or no; for were he a prophet, ſhe thought he would certainly know that the meat was poiſoned, and therefore would receive no harm; but if he were not a prophet, ſhe ſhould do the world good ſervice in ridding it of ſo wicked a tyrant. He however after this took ſeveral cities, and among the reſt Mecca, when the reſt of the Arabs, who had not yet felt his arms, were ſo terrified at his power, that they all came in; ſo that in the 10th year of the Hegira, and 631 of our Lord, his empire and religion were eſtabliſhed through all Arabia. He then returned to Medina, where he died in the year 633, and the 63d of his age. Mahomet was interred at Medina and not at Mecca, as is commonly imagined. His tomb is not ſuſpended in the air, but is a ſtone coffin placed on the floor, in a chapel into which nobody can enter, becauſe it is ſurrounded with large bars of iron. There is ſtill extant a famous book written by Mahomet, called *Al Koran*, or the Koran, which includes his law and religion. It is certain, and Mahomet confeſſes it, that his religion was eſtabliſhed by conqueſt, and that the ſwiftneſs of its great progreſs was owing to the ſucceſs of his arms, which has nothing ſtrange or miraculous in it. No religion or government could be leſs favourable to the fair ſex than Mahometaniſm; it allowed men to have ſeveral wives, to beat them when they would not obey, and to divorce them when they became diſagreeable: but he would not allow the women to leave their offended huſbands without their conſent. In a word, moſt of his laws with reſpect to women are very ſevere.

MAHOMETANS, thoſe who believe and practiſe the religion of Mahomet.— The fundamental poſition on which Mahomet erected the ſuperſtructure of his religion was, that there has been from the beginning of the world but one true orthodox belief, which conſiſts in acknowledging one only true God, and obeying ſuch of his meſſengers and prophets as he has from time to time ſent into the world to reveal his will to mankind. Upon this foundation he ſet up for a prophet, to extirpate idolatry, which was the religion of the Arabs, his countrymen, and to reform the other abuſes crept into religion. The whole ſubſtance of his doctrine he therefore comprehended in theſe two principal articles of faith, "There is but one God, and Mahomet is his prophet:" in conſequence of which laſt article, all ſuch ordinances and inſtitutions as he thought fit to eſtabliſh, were to be received as obligatory and of divine authority. The Mahometans divide their religion into two general parts, faith and practice; of which the firſt is divided into ſix branches, belief in God, in his angels, in his ſcriptures, in his prophets, in the reſurrection and final judgment, and in God's abſolute decrees. The points relating to practice are, prayer, with waſhings, &c. alms, faſting, pilgrimage to Mecca, and circumciſion. In regard to theſe practical points, Mahomet, it is ſaid, declared, that the practice of religion is founded upon cleanlineſs, which is one half of faith and the key of prayer. Alms-giving is thought to be ſo pleaſing in the ſight of God, that the caliph Omar Ebn Abdalaziz uſed to ſay, prayer carries us half-way to God, faſting brings us to the door of his palace, and alms procures us admiſſion: and Mahomet himſelf uſed to ſay of faſting, that it was the gate of religion; and the odour of the mouth of him who faſteth is more grateful to God than that of muſk.

* MAHON (PORT) a ſea-port town of the iſland of Minorca, and capital of the country, the Engliſh having removed the court of juſtice thither from Citadella, and made it the ſeat of government. The buildings are of free-ſtone, and either covered with tiles, or terraced on the top like floors. The houſes of the gentlemen and burghers are built on two or three ſides of a quadrangle, and ſometimes form a complete hollow ſquare. Theſe are two ſtories high, but thoſe of the tradeſmen and labourers are no more than twelve feet. The ſtreets are generally very narrow, and none of them paved, a naked rock appearing every where. It is ſeated at a fine bay, at the eaſt end of the iſland, being a commodious harbour, where the largeſt fleets may ride ſecure from tempeſts and enemies; the entrance being defended by platforms, and very ſtrong forts. It was conquered by the Engliſh in 1708, who kept poſſeſſion till 1757, when the town and the whole iſland were taken by the French: they were, however, reſtored to the Engliſh by the late treaty of peace. It is one hundred and fifty miles ſouth-eaſt of Barcelona. Long. 4. 25. E. Lat. 39. 54. N.

MAIDEN, an inſtrument uſed in

Scotland for beheading criminals. It is a broad piece of iron about a foot ſquare, very ſharp on the lower part, and loaded above with a very heavy weight of lead. At the time of execution it is pulled up to the top of a narrow wooden frame, about ten feet high, and as broad as the engine, with mouldings on each ſide for the maiden to ſlide in. A convenience is made about four feet from the ground, for the priſoner to lay his neck; and there is a kind of bar ſo faſtened as to keep him from ſtirring. The priſoner being thus ſecured, and the ſign given, the maiden is let looſe, which in a moment ſeparates his head from his body.

MAIDEN ASSIZE, an aſſize wherein no perſon is condemned to die.

MAJESTY, a title given to kings.

MAIL, or *Coat of* MAIL, a piece of defenſive armour for the body, made of ſmall iron rings interwoven in the manner of a net.

MAIM, or MAYHEM, in law, a wound by which a perſon loſes the uſe of a member that might have been a defence to him.

MAIN, in the ſea-language, chief, principal, as the main-maſt, main-yard, main-ſail, main-hatchway, &c.

MAINPRISE, in law, the receiving a perſon into friendly cuſtody, who might otherwiſe be committed to priſon, on ſecurity given that he ſhall be forth-coming at a time and place appointed. There is a difference between bail and mainpriſe, for a perſon mainpriſed is ſaid to be at large from the day of his being mainpriſed, till the day of his appearance, and is not liable to be confined by his ſureties: but when a perſon is let to bail, by a judge, &c. till a certain day, he is in law always accounted in the ward of his bail during the time, who may, if they pleaſe, keep him in priſon.

MAJOR, in the art of war, the name of ſeveral officers of very different ranks; as, 1. Major-general, the next officer to the lieutenant-general: his chief buſineſs is to receive the orders from the general, or in his abſence from the lieutenant-general of the day; which he is to diſtribute to the brigade-majors, with whom he is to regulate the guards, convoys, and detachments. When there are two attacks at a ſiege, he commands that on the left. He ought to be well acquainted with the ſtrength of each brigade, of each regiment in particular, and to have a liſt of all the field officers. In ſhort, he is in the army what a major is in a regiment. He is allowed an aid de camp, and has a ſerjeant and fifteen men for his guard. 2. Major of a brigade, the officer who receives the orders from the major-general, and afterwards delivers them to the adjutants of the regiments at the head of the brigade; where he takes and marches the detachments, &c. to the general rendezvous. He ought to be an expert captain, to know the ſtate and condition of the brigade, and keep a roll of the colonels, lieutenant-colonels, majors, and adjutants. 3. Major of a regiment, the next officer to the lieutenant-colonel, generally promoted from the eldeſt captain. He is to take care that the regiment be well exerciſed, to ſee it march in good order, and to rally it in caſe of its being broke. He is the only officer among the foot that is allowed to be on horſeback in time of action, that he may the more readily execute the colonel's orders, either in advancing or drawing off the regiment. 4. Major of a regiment of horſe, is the firſt captain, who commands in the abſence of the colonel. 5. Town major, the third officer in a garriſon, being next to the deputy-governor. He ſhould underſtand fortification, and hath charge of the guards, rounds, patrols, &c. His buſineſs is alſo to take care that the ſoldiers arms are in good order; he likewiſe orders the gates to be opened and ſhut, and gives the governor an account of all that paſſes within the place. There are alſo aids-major, drums-major, ſerjeants-major, &c. ſo called from their prehemimence above others of the ſame denomination.

MAJOR, in logic, the firſt propoſition of a ſyllogiſm.

MAJOR and MINOR, in muſic, ſignify imperfect concords, differing from each other by a ſemi-tone minor.

MAJORANA, marjoram, in botany, a low plant. It is ſown annually in gardens, for culinary as well as medicinal uſes: the ſeeds, which rarely come to perfection in England, are procured from the ſouth of France, where the plant is ſaid to be indigenous.

The leaves and tops of marjoram have a pleaſant ſmell, and a moderately warm aromatic bitteriſh taſte. This plant has been chiefly recommended in diſorders of the head and nerves, in uterine obſtructions and mucous diſcharges proceeding from what is called a cold cauſe, that is, from a laxity and debility of the ſolids, and a ſluggiſh ſtate of the juices, and in the humoural aſthmas and catarrhs of old people. The powder of the leaves, thin diſtilled water, and the eſſential oil properly diluted, are agreeable errhines, and accounted particularly uſeful in pituitous obſtructions of the noſtrils, and diſorders of the olfactory organs.

* MAJORCA, a Spaniſh iſland in the Mediterranean ſea, between the iſland of Ivica to the weſt, and that of Minorca to the eaſt. It is about eighty miles ſouth of the coaſt of Catalonia, and one hundred eaſt of Valencia, and is about ſixty miles in length, and forty-five in breadth. It is a mountainous country, and yet abounds in olive trees, delicious wine, and excellent corn. It has no rivers, though there are a great number of ſprings and wells, as well as ſeveral good harbours. The inhabitants are robuſt, active, and good ſeamen. It was taken by the Moors in 1229.

* MAJORCA, a large, handſome, rich, and ſtrong town, in the iſland of the ſame name, with a biſhop's ſee. It contains about ſix thouſand houſes, and twenty-two churches, beſides the cathedral. The ſquares, the cathedral, and the royal palace are magnificent ſtructures. A captain-general reſides there, who commands the whole iſland; and there is a garriſon againſt the incurſion of the Moors. It was taken by the Engliſh in 1706, but was retaken in 1715, ſince which time it has been in the hands of the Spaniards. It is ſeated on the ſouth-weſt part of the iſland, where there is a good harbour, one hundred and twenty miles ſouth-eaſt of Barcelona, and three hundred from Madrid. Long. 2. 55. E. Lat. 39. 36. N.

MAJORITY, the greater number of perſons.

MAIZE, a ſpecies of grain ſo commonly uſed for food in America, that it has obtained the name of Indian corn. The ſize of its ear differs greatly, according to the fertility of the ſoil, and the warmth of the climate in which it is cultivated; but at a medium, it is about a ſpan long, and commonly has eight or more rows of grain, each of which uſually contains upwards of thirty ſeeds, of various colours, as red, white, yellow, blue, olive, greeniſh, blackiſh, ſpeckled, ſtriped, &c. ſometimes in the ſame field and the ſame ear; but the white and yellow are the moſt common: nor does this diverſity of colours ever reach beyond the outſide of the grain, the flower of which always is white, with a little tinge of yellow. Theſe ſeeds, which are as big as large peas, are round at their outer ſurface, very ſmooth, and ſet extremely cloſe, in ſtraight lines. The ear is cloathed with ſeveral ſtrong thick huſks, which defend it not only from unſeaſonable rains and the cold of the night, for it does not ripen fully in ſome places, till towards the latter end of September, but alſo from crows and other birds, which, being allured by the ſweetneſs of the grain before it hardens, flock to it in great numbers, ſuck through the top of the outer covering, and devour as far as they can reach. In the northern colonies, the ſtalk of this plant, which contains a remarkably ſweet pith, and is jointed like a cane, does not grow near ſo high as in the ſouthern parts. It has long leaves at every joint, and at the top a bunch of flowers of various colours, highly pleaſing to the eye. The northern Indians, far up in the country, have a ſpecies of this grain, called Mohawk's corn, which never grows high, and tho' planted in June, ripens in due ſeaſon. The general time of planting it is between the middle of March and the beginning of June, or more particularly, from the middle of April to the middle of May. This plant is ſeldom cultivated in England for uſe, though it might probably turn to good account, as was lately experienced by a gentleman in Lincolnſhire, who planted this corn in an open field, where it ripened perfectly, and yielded an abundant crop. Large quantities of it are raiſed in Aſia and Africa, in ſeveral parts of France, in Italy, Germany, and North America. The manner of uſing this corn in America is various. It has this advantage over wheat, that ſubſtance may be drawn from your corn-fields long before the general harveſt; for the green ears roaſted are delicate food; and as the corn ripens and grows harder, the ears boiled are good eating with butter and ſalt. When it is ripe, the corn parched and ground into meal is the hunting and war proviſion of the Indians, being light to carry, and affording good nouriſhment. They mix a little of it with water, and it requires no other cooking, having already paſſed the fire in the parching. The grain ſoaked in water will part with its ſkin, when beat in a large mortar with a wooden peſtle; then it is boiled and eaten with milk. Being pounded coarſely, dry, it is alſo boiled and eaten as rice. Bag puddings, and baked puddings made of it properly, are very good. The meal is alſo boiled with water, to make what they call a haſty-pudding, which they eat with butter and ſugar, or with milk. This haſty-pudding, or boiled meal, being mixed with twice as much dry wheat flower, and worked into loaves, make much better and pleaſanter bread than flour alone.

MALACHI, or *the Prophecy of* MALACHI, a canonical book of the Old Teſtament, and the laſt of the twelve prophets. Malachi propheſied about three hundred years before Chriſt, reproving the Jews for their wickedneſs after their return from Babylon, charging them with rebellion, ſacrilege, adultery, prophaneneſs, and infidelity, and condemning the prieſts for being ſcandalouſly careleſs in their miniſtry; at the ſame time not forgetting to encourage the pious few, who maintained their integrity. This prophet diſtinctly points at the Meſſiah, who was ſuddenly to come to his temple, and to be introduced by Elijah the prophet, that is, by John the Baptiſt, who came in the ſpirit and power of Elias or Elijah.

MALACHITES, or MOLOCHITES, in natural hiſtory, &c. a ſpecies of jaſper, ſuppoſed to be poſſeſſed of amuletic virtues.

MALACIA, μαλακια, in medicine, a languiſhing diſorder incident to pregnant women, in which they long ſometimes for one kind of food, and ſometimes for another, and eat it with an extraordinary greedineſs. When women labouring under this diſorder begin to abſtain from the improper and abſurd things they were fond of, and with leſs reluctance uſe laudable and wholſome aliments, it is an infallible ſign of a beginning cure and approaching health. Pregnant women are generally freed from the malacia, about the fourth month; but if it continues longer it is dangerous, becauſe the peccant humours are deeply rooted. For the cure of this diſorder, in pregnant women, but few medicines are recommended for fear of abortion: however, gentle medicines may be uſed for evacuating and corroborating the ſtomach. In young women labouring under a chloroſis, this diſtemper is cured by the ſame medicines that are proper for removing the chloroſis. See *Chloroſis*.

MALACOPTERYGIOUS, among ichthyologiſts, an appellation given to one of the five orders of fiſhes, from their having the rays of their fins bony, but not pointed or ſharp at the extremities, like thoſe of acanthopterygious fiſhes.

MALACOSTOMOUS, an appellation given to the fiſhes that are deſtitute of teeth in the jaws, called in Engliſh leather-mouthed: as the tench, carp, bream, &c.

MALANDERS, in farriery, cracks in the bend of a horſe's knee, that diſcharge a ſharp indigeſted matter; they are often the occaſion of lameneſs, ſtiffneſs, and the horſe's tumbling. This diſtemper is cured by waſhing the parts with a lather of ſoap warmed, or old chamber-ley; and then applying over the cracks a ſtrong mercurial ointment ſpread on tow, with which they ſhould be dreſſed, night and morning, till all the ſcabs fall off: if this ſhould not ſucceed, anoint them night and morning with a little of the following; and apply the above oinment over it. Take of Æthiops mineral half an ounce; white vitriol one dram; ſoft green ſope ſix ounces. Anoint with this often, but firſt clip away the hair, and clear the ſcabs. On their drying up, it may be proper to give a gentle purge or two; or the nitre balls may be taken advantageouſly for a fortnight, or three weeks.

MALE, *Mas*, among zoologiſts, that ſex of animals having the parts of generation without the body. The term male has alſo, from ſome ſimilitude to that ſex in animals, been applied to ſeveral inanimate things: thus we ſay, a male flower, a male ſcrew, &c.

MALICE, in law, a premeditated deſign to do miſchief or injury to another.

MALIGNANT, among phyſicians, a term applied to diſeaſes of a very dangerous nature, and generally infectious; ſuch are the dyſentery, hoſpital fever, &c. in their worſt ſtages.

MALLEABLE, a property of metals, whereby they are capable of being extended by being beat with the hammer. See *Ductility* and *Metal.*

MALLEOLUS, in anatomy, a name given by anatomiſts to the inferior extremities of the tibia and fibula.

MALLET, a kind of large wooden hammer, uſed by artificers who work with a chiſſel, as ſculptors, maſons, and ſtone-cutters, whoſe mallets are commonly round; and by joiners, carpenters, &c. who work with ſquare-headed mallets.

MALLEUS, in anatomy, a bone of the ear, ſo called from its reſemblance to a mallet.

MALLOW, MALVA, in botany. See *Malva.*

MALMSEY, a rich kind of wine, ſo called, as being brought from Malvaſia, in the Morea.

* MALO, (St.) Expedition againſt. In the laſt war, the Engliſh miniſtry were ſo far from being diſpirited with the bad ſucceſs of the expedition againſt Rochfort in the year 1757, that the diſappointment ſeemed to animate them the more. Accordingly, as ſoon as the ſeaſon admitted, the army aſſembled again in the Iſle of Wight: it conſiſted of fifteen battalions, four hundred artillery men, and five hundred and forty light horſe, in all thirteen thouſand fighting men. They were alſo provided with ſixty pieces of cannon, fifteen of which were twenty-four pounders, and fifty pieces of the mortar kind. On the 23d of May, 1758, Charles duke of Marlborough arrived in the camp as commander in chief, lord George Sackville and the earl of Ancram were the lieutenant-generals; the major-generals were Waldgrave, Moſtyn, Drury, Boſcawen, and Elliot. The baggage began to be embarked on the 25th, next day the firſt brigade were put on board their reſpective tranſports, and the whole embarkation was finiſhed on the 28th. The troops that were to make the firſt debarkment were to keep themſelves in readineſs; to take two days proviſions, and a tent for every eight men. The officers that were to command them were to have only private ſoldiers tents, till they could eſtabliſh themſelves on the ſhore. Lord Anſon and ſir Edward Hawke had hoiſted their flags at Spithead; but commodore Howe commanded the frigates, and was intruſted with the direction of every thing that related to the landing of the troops in the enemy's dominions. For this purpoſe a conſiderable number of flat-bottomed boats, of a new invention, was provided; and nothing was wanting that could be deemed neceſſary to forward the execution of the enterpriſe. The weather, during the encampment on the Iſle of Wight, had been remarkably pleaſant; the men had conſtant exerciſe morning and evening, were in good health and ſpirits, and longed for nothing ſo much as an opportunity to exert themſelves in actual ſervice. The whole nation ſeemed to be animated with an uncommon degree of alacrity; lord Downe, ſir James Lowther, ſir John Armitage, Mr. Berkeley, and Mr. Delavel, perſons of diſtinguiſhed rank and fortune, engaged as volunteers in the ſervice, and every lover of his country began to entertain agreeable hopes of the ſucceſs of the armament, though the deſtination of it was kept an inviolable ſecret. It was, however, eaſily perceived that the intended voyage could not be of any conſiderable length, becauſe a great number of ſoldiers were crowded into one tranſport. This diſpoſition was attended with ſuch inconvenience, that the troops loudly complained they were in danger of being ſtifled for want of room and freſh air; the whole tonnage of the tranſports amounting to no more than eleven thouſand and eighty-four. To remedy this evil, four hundred men of the guards were taken on board a ſhip of war, and by this expedient the reſt were conſiderably eaſed. The ſoldiers had another ſubject of complaint, which is but too common with all perſons employed by ſea for the ſervice of their country. They were put on ſhort allowance of proviſions, and even the beef they received was old, hard, ſalt, and diſagreeable. At this period the captain of a French ſloop, who had been detached for intelligence, boldly ran up among the fleet at Spithead, and ſaluted the admiral, as if he had been a ſubject of England; but he was ſoon diſcovered and taken. The enemies veſſels were very alert upon the coaſt of England; for, notwithſtanding a great number of cruizers, the French privateers made prizes of ſome ſmall craft on the back of the Iſle of Wight. The proper diſpoſition being made for landing, if it ſhould be thought proper, and every thing prepared for the voyage, the fleet was favoured with a fair wind on Thurſday the 1ſt of June; lord Anſon immediately weighed and put to ſea with all the ſhips of war, except thoſe deſtined as convoy to the tranſports, under the immediate direction of commodore Howe. By eleven in the forenoon all the tranſports were under ſail; by two o'clock the fleet cleared the Iſle of Wight, and ſtood over to the coaſt of France, with a freſh gale, which blew all night. In the morning of Saturday, the 3d of June, a great part of the fleet was aſtern of the commodore, who being to the weſtward of Alderney brought to off Sark, and dropped anchor in very foul and dangerous ground, where many anchors were loſt. The Ward tranſport, having on board part of the firſt regiment of guards, drove upon a rock, and fired guns of diſtreſs, but, when ſhe was on the point of foundering, all the men were ſaved in boats, and removed into other veſſels. Notwithſtanding the repeated ſignals to make ſail, the tranſports lagged behind, ſome of them at the diſtance of five or ſix

leagues, otherwiſe the fleet might have anchored this evening in the Bay of Cancalle, near the place of its deſtination. At night the commodore weighed and ſtood off to ſea, and on Sunday morning made ſail for land. Next day the fleet made St. Malo, and about two in the afternoon ſtood into the Bay of Cancalle, where ſome batteries on the land beginning to fire on the cutters, the frigates ran in ſhore, and a few ſhot were exchanged. About five in the evening all the grenadiers in the army went on board the flat-bottomed boats for landing; the volunteers accompanied this detachment, and acted with them on all occaſions. About ſeven, Mr. Howe in his own ſhip, the Eſſex, led the way, and with two others ranging up along-ſide of a ſmall battery, poured in ſome broadſides, by which it was effectually ſilenced, and the whole army landed without any loſs, except that of three ſailors; nor did they meet with any oppoſition, but from the random ſhot of a few ſtraggling peaſants. The troops thus landed, marched forthwith in ſmall parties to ſeize the poſts and villages which were ſituated on high grounds, and rendered very ſtrong by hollow ways, incloſures, gullies, and every natural defence, except water. The field-pieces, being ten light ſix pounders, were likewiſe landed, and by a miſtake of orders drawn into a deep road, where they ſtuck in the mire, and with great difficulty were brought back to the beach. All night the troops lay on their arms. Next morning, a ſpot of ground was marked out for a camp, to be fortified with an entrenchment, to ſecure a retreat for the army; and in the evening ſix hundred men were ſet to work upon it. The people in the country, except a few of the aged and infirm, abandoned their houſes in the utmoſt conſternation. The army being quite diſembarked, the troops encamped on the ground choſen for the entrenchment, on the road from Cancalle to St. Malo. On Wedneſday morning the duke of Marlborough and lord George Sackville, with the firſt column of the army, began their march towards St. Malo. Lord Ancram, at the head of the ſecond column, advanced towards the ſame place, through the great road by the ſea ſide, to the right of the village of Dol. The brigade of the guards occupied an encampment three miles to the left, on a ſpot of ground which was the moſt acceſſible avenue by which the enemy could fall upon the army. This night and next day, a detachment of troops ſet on fire above one hundred ſail of ſhipping, together with a great number of magazines filled with naval ſtores, at St. Servand, and Solidore, a kind of ſuburb, to St. Malo, with a large and open harbour. They likewiſe took poſſeſſion of a fort near the point of Parame, which the enemy had abandoned. In the mean time, the brigade left at Cancalle were employed in making the entrenchments, as well as in building two ſquare redoubts, one horn-work, and two batteries, for the defence of eleven thouſand and thirty paces of ground. In the rear of the entrenchment were landing-places, with high rocks, and difficult communications towards the ſhore. The front was covered by a hollow way, flanked with houſes, in which loop-holes were made; a little further advanced was a fall of large trees cut down for the purpoſe. The left was ſecured by a *deep eſcarpment*: the center and the right defended by falls of trees, and the village of Cancalle, of very difficult acceſs. Never was a finer ſituation for a ſmall army to make a ſtand againſt any ſuperiority of number. The three brigades, encamped with the duke of Marlborough at Parame, had no opportunity of acting. The light-horſe and out-parties ſcoured the country, and brought in numbers of priſoners, but there was little proſpect of being able to reduce St. Malo. The place is ſtrong by its ſituation on a peninſula, almoſt ſurrounded by the ſea, and having no communication with the land, but by a narrow dike of about ſix or ſeven hundred yards in length; and it has alſo two hundred and fifty pieces of cannon mounted on its ramparts. It is true it has no outworks, and its fortifications are ſuch as could not ſuſtain a regular ſiege for any length of time; but it is ſtrong by nature and art towards the ſea. Upon Friday, commodore Howe, with the ſhips of war and artillery tranſports, ſailed from the bay of Cancalle towards St. Malo, with an intention to land the battering cannon; but the deſign of a formal ſiege was then thought impracticable. It would have taken up more time than upon the preſent plan it would have been prudent to beſtow. The artillery could not be landed near the town; nor were there horſes ſufficient to draw it from any conſiderable diſtance: and before regular approaches could have been made, the enemy, in all probability, would have been able to aſſemble a force much ſuperior to the Engliſh army. On theſe conſiderations, the general reſigned all thoughts of attacking the town by land, and commodore Howe failed back to the Bay of Cançalle. Some letters paſſed between the duke of Marlborough and the governor of the town, and an exact account was taken of the ſhips, veſſels, ſtorehouſes, and magazines, which had been deſtroyed at St. Servand, whereby it appears that incredible damage was done to the French in this excurſion, however they may endeavour to conceal or extenuate the particulars of their loſs.

MALT, barley prepared, to fit it for making a potable liquor called beer, or ale, by ſtopping it ſhort at the beginning of vegetation.

Malt liquors have different names, and different virtues, from the different methods of preparing the malt, whence they are diſtinguiſhed into pale and brown: and from the various methods taken in brewing the liquors, whence they are divided into ale and beer, ſtrong and ſmall, new and old. See *Brewing*.

The colour of the liquor, and many of its effects, depend on the manner of drying the malt it is brewed with; that which has the paleſt tinge, is made with malt but ſlenderly dried; that which is high coloured, is made with malt that is high dried, or roaſted as it were, in compariſon of the other; and amber ale is made of a mixture of both. Another difference in the preparations of malt-liquors conſiſts in the larger quantity of hops in beer, and the ſmaller in ale; for hops add ſomething of an alkaline nature to the liquor, and not only render it more eaſy of digeſtion, and ſecretion in the body, but while it is in the liquor, preprevent its running into ſuch coheſions as would make it ropy, vapid, and ſour. For this reaſon Dr. Quincy is of opinion, that for one conſtitution injured by beer, there are numbers ſpoiled by ale, which is apt to ſtuff the veſſels with ſlime and viſcidity, to make a body unwieldly and corpulent, and to pave the way for cachexies, the jaundice, aſthmas, and the dropſy. The different degrees of ſtrength in malt-liquors alſo make them produce different effects. The ſtronger they are, the more viſcid parts they carry into the blood: they are therefore in general the more wholeſome for being ſmall: that is, of ſuch a ſtrength as to carry ſome degree of warmth into the ſtomach, but not ſo as to prevent their being proper diluters of our neceſſary food. Indeed people of robuſt conſtitutions, who labour very hard, may diſpenſe with reaſonable quantities of the ſtrongeſt; eſpecially as their food is frequently poor and ſlender, the deficiencies of which this ſupplies; and their continual exerciſe and ſtrength of body digeſts and breaks the viſcidities of the drink into convenient nouriſhment: though in perſons of another habit and way of living, they would only produce obſtructions and ill humours. As to the age of theſe liquors, it has ſomewhat the ſame effect as hops, for thoſe that are longeſt kept, are certainly leaſt viſcid; for age, by degrees, breaks their viſcid parts, and by rendering them ſmaller makes them fitter for ſecretion.

Knights of MALTA, called alſo *Hoſpitallers of St. John of Jeruſalem*, a religious military order, whoſe reſidence is in the iſland of Malta. The order conſiſts of three eſtates, the knights, chaplains, and ſervants at arms: there are alſo prieſts who officiate in the churches, friar ſervants, who aſſiſt at the offices, and donnes or demicroſſes; but theſe are not reckoned conſtituent parts of the body: the government of the order is mixt, being partly monarchial, and partly ariſtocratical: the grand maſter is ſovereign. The knights formerly conſiſted of eight different languages, but now only ſeven, the Engliſh having withdrawn themſelves. None are admitted into this order but ſuch as are of noble birth: the knights are of two ſorts, thoſe who have a right to be candidates for the dignity of grand maſter, called grand croſſes, and thoſe who are only knights aſſiſtants: they never marry, yet have continued from 1090 to the preſent time. The knights are received into this order either by undergoing the trials preſcribed by the ſtatutes, or by diſpenſation.

MALVA, common mallow, in botany, a perennial plant, common in uncultivated grounds, and found in flower throughout the ſummer. The leaves and flowers of the mallow are in taſte mucilaginous, and of no remarkable ſmell. The leaves were formely of ſome eſteem, as an emollient or laxative dietetic, in dry conſtipated habits, in the warmer climates: at preſent, infuſions or decoctions of the leaves and flowers, and a conſerve made by beating the freſh flowers, with thrice their weight of fine ſugar, are ſometimes directed in dyſuries, heat and ſharpneſs of urine, and other like complaints; but the principal uſe of the herb is in emollient clyſters, cataplaſms, and fomentations. They have a ſoft ſweet taſte, without any particular flavour, approaching in ſome degree to that of liquorice: an extract made from them by rectified ſpirits of wine is of a great ſweetneſs.

MALUS, the apple-tree, in botany, according to Linnæus, a ſpecies of the pyrus.

MAMMÆ, the breaſts, in anatomy, two eminences ſituated in the anterior, and a little towards the lateral parts of the thorax; their middle part lying almoſt oppoſite to the bony extremity of the ſixth rib on each ſide. In children of both ſexes, and in males of all ages, they are commonly no more than cutaneous tubercles, or ſoft verrucæ of a reddiſh colour, called papillæ, or nipples; each of them being ſurrounded by a ſmall, thin, and pretty broad circle, more or leſs of a browniſh colour, and an uneven ſurface termed areola. In females, when come to the age of puberty, a third part is joined to the two former, which is a convex protuberance more or leſs round, of about five or ſix fingers in breadth, the papilla and areola being ſituated near the middle of the convex ſurface. This is what is properly termed the mamma, and it may be called the body of the breaſt, when compared with the other two parts. It increaſes with age, and is very large in women with child, and in thoſe that give ſuck. In old age it decreaſes and becomes flabby, loſing its natural conſiſtence and ſolidity.

The uſe of the breaſts, in the nouriſhment of children, is well known to the world: but it is not certainly known what the papillæ and areolæ in men can be deſigned for. Milk has been obſerved in them in children of both ſexes. *Winſlow.*

MAMMILLARY, MAMMILLARIS, in anatomy, an epithet given to two little protuberances, ſomewhat reſembling the nipples of the breaſt, found under the four ventricles of the brain, and ſuppoſed to be the organs of ſmelling. Theſe are called apophyſes mammillares. There is alſo a muſcle called mammillaris, or maſtoides, ſerving to ſtoop the head.

MAN, *Homo*, in zoology, the chief of the animal part of the creation; making a diſtinct genus of that order of quadrupeds, which Linnæus calls anthropomorpha, from their reſemblance to the human form. The ſame author diſtinguiſhes the race of mankind, according to their different colours, into the Europeans, or white men; the Americans, or copper-coloured men: the Aſiatics, or tawny-coloured men: and thoſe of Africa, or blacks. *Noſce te ipſum*, know thyſelf, is a precept worthy of the law-giver of Athens, the ancient ſeat of polite literature; an important branch of knowledge, which may be reduced to the following heads. 1. In a religious view, *theologicè*, that you was created with an immortal ſoul, after the image of God. 2. In a moral ſenſe, *moraliter*, that you alone was bleſſed with a rational ſoul, to be employed to the praiſe of the Creator. 3. With reſpect to the other works of the creation, *naturaliter*, that you are conſtituted their lord, for whoſe uſe they were made. 4. In a phyſiological ſenſe, *phyſiologicè*, the moſt perfect and amazing fabric of your body. 5. With regard to diet, *diæteticè*, what things are uſeful, and what hurtful, in this reſpect. 6 In a pathological ſenſe, *pathologicè*, how frail you are, and how ſubject to a thouſand calamities. Theſe are the heads, which, according to Linnæus, comprehend the knowledge of man, conſidered as an individual; a branch of knowledge ſo eſſential to the human race, that, without it, he ſeems to doubt whether any other characters are ſufficient to entitle one to be ranked among mankind: for he adds, *Hæc ſi noveris*, HOMO, *es, et a reliquis animalibus diſtinctiſſimum genus.*

* MAN, an iſland in the Iriſh ſea, thirty-five miles weſt of the coaſt of Cumberland, and twenty-eight north of the iſland of Angleſey in North-Wales, ten ſouth of the coaſt of Galloway in Scotland, and forty eaſt of the coaſt of Down, in Ireland; whence it may be ſeen from England, Scotland, and Ireland. It is near thirty miles in length, and nine in breadth, containing ſeventeen pariſhes. The chief towns are Ruthin, Douglas, and Peel. The ſoil is good, conſiſting of arable and paſture, and is more than ſufficient for the ſubſiſtence of the natives. The air is very healthful, the people here living to a very great age. They are a mixture of Engliſh, Scotch and Iriſh, and ſubject to the king of Great-Britain. Their ſtaple commodities are wool, hides, and tallow. This iſland has a biſhop, ſuffragan to York, ſtyled Soder and Man, but he is no lord of parliament. Man lies in 4 deg. 30 min. W. Long. and between 53 deg. 53 min. and 54. 25 N. Lat.

MANATI, in zoology, an animal called by Linnæus thrichechus.

* MANCHESTER, a very large and populous town in Lancaſhire, with a market on Saturdays, and three fairs; on Whit-Monday, September 21, and November 6, for horſes, horned cattle, bedding, cloth and toys. It is ſeated between the rivers Irk and Irwell, upon a ſtony hill, and is a place of great antiquity. It is now a flouriſhing town, and has ſeveral curious manufactures, known in London by the name of Mancheſter goods. Their velvets of late are come to great repute. Its chief ornaments are the college, the market-place, and the collegiate church; which laſt has a ſmall choir, of excellent workmanſhip. It has an additional church, which was begun in queen Anne's reign, and finiſhed in 1723. It ſends no members to parliament; but has the title of a duchy. It is ſixty-ſeven miles weſt-ſouth-weſt of York, thirty-nine eaſt-north-eaſt of Cheſter, and one hundred and eighty-two north-north-weſt of London. Long. 2. 12. W. Lat. 43. 27. N.

MANDAMUS, in law, a writ iſſuing out of the King's-Bench, ſent to a corporation, commanding them to admit or reſtore a perſon to his office.

MANDARINS, a name given to the magiſtrates and governors of provinces in China, choſen out of the moſt learned men, and whoſe government is always at a great diſtance from the place of their birth. Mandarin is alſo a name given by the Chineſe to the learned language of the country; for beſides the language peculiar to every province, there is one common to all the learned in the empire, which is in China what Latin is in Europe; this is called the Mandarin tongue, or the language of the court.

MANDATE, in law, a judicial commandment to do ſomething.

MANE, the hair hanging down from a horſe's neck.

MANEGE, or MANAGE, the exerciſe of riding the great horſe, or the ground ſet apart for that purpoſe; which is ſometimes covered, for continuing the exerciſe in bad weather; and ſometimes open, for giving more liberty and freedom both to the horſeman and horſe.

MANES, in the pagan ſyſtem of theology, a general name for the infernal deities, or gods of hell. The ancients comprehended under manes not only Pluto, Proſerpine, and Minos, but the ſouls likewiſe of the deceaſed were taken into the number, and eſteemed gods of hell. It was uſual to erect altars and offer libations to the manes of deceaſed friends and relations.

MANGO *Tree*, in botany, the name of a vaſt tree, forty feet in height, and eighteen in thickneſs, ſpreading its numerous branches all around at a great diſtance, being always green, and bearing fruit once or twice a year, from ſix or ſeven years old to an hundred. It is propagated by inciſion, or ſowing the ſeed, in Malabar, Goa, Bengal, Pegu, and many other countries in the Eaſt-Indies. The fruit is of a round oblong figure, flat, ſlightly ſinuated, or hollowed at the ſides, and ſhaped much like a kidney, larger than a gooſe egg, ſmooth, ſhining, firſt green ſpeckled with white, then inclining to yellow, and at laſt of a gold-colour: it has a yellowiſh and ſucculent pulp, not unlike that of a peach; or rather a plum, firſt acid, then acidodulcid, and pleaſant to the taſte. Within the pulp is contained an oblong, compreſſed, and languinous ſtone, thin, yet very hard and tenacious, and including a callous oblong kernel, very like an oblong almond, and of the ſame bigneſs, and of a bitteriſh, though not unpleaſant taſte. There are various ſorts of this fruit, as there are of our apples and pears, which are very different, according to the countries where they grow: that ſpecies which is without a ſtone, and is very grateful to the palate, ſeems to us only a variety, or a degenerate fruit. The fruit is cut into ſlices, and eaten either without wine, or macerated in wine; it is alſo candied, in order to its preſervation. Sometimes they open it with a knife, and fill up the middle with freſh ginger, garlic, muſtard, and ſalt, with oil or vinegar, that they may eat it with rice, or after the manner of pickled olives. As to its temperament, this fruit is cold and moiſt, though the Indian phyſicians affirm the contrary. We uſe pickled mangoes, which are imported to us, as we do pickled cucumbers, for ſauce to roaſted meet. The ſtones roaſted are ſaid to cure a looſeneſs, which Garcias found to be true. The wood of the tree, with cinders, is uſed for burning the carcaſes of the pagans, as being conſecrated to this rite; whence it ſerves alſo for coffins, in which they repoſit their dead; it is but of a ſoft ſubſtance, and of ſhort duration. The ſtalks ſupply the place of arequa or caunga, in the chewing of betel; the ſame, calcined and reduced to powder, take away warts. Of the tender leaves, with the bark of the avanacoe, that is, the ricinus, the ſeed of cummin and parpadogam, is made a decoction, which is highly beneficial in the cough, aſthma, and other affections of the thorax. The bark of the tree pulveriſed, and taken in chicken-broth, is an excellent diſſolvent of extravaſated and coagulated blood, occaſioned by a fall, in any part of the body. The juice of the bark, with the white of an egg, and very little opium, taken inwardly, is a preſent remedy againſt the diarrhœa, dyſentery, and teneſmus. Of the gum of the tree, and the flowers of rice, with the addition of a ſmall quantity of opium and pepper, are prepared pills, which alſo cure all ſorts of fluxes of the belly. Of the flower of the dried kernels the natives have the art of preparing various kinds of food.

MANGANESE, Magnesia, in natural hiſtory, a poor kind of iron ore. It is a denſe, heavy ſubſtance in its fineſt pieces; being compoſed of a number of broad and thick ſtriæ irregularly laid together, and much reſembling thoſe of native antimony; in theſe maſſes it is ſometimes reddiſh, ſometimes of a dark grey, and ſometimes of a fine pale light grey, approaching to the colour of the fineſt poliſhed iron: but there is a leſs perfect kind, in which the whole maſs ſeems only to conſiſt of a number of irregularly finiſhed pieces, of a brittle and ſomewhat gloſſy ore, blended very looſely together.

Manganeſe is found in great abundance in the German and Sweediſh mines, as alſo in France, Italy, and England; but ours is not equal in beauty or goodneſs to the German.

MANICORDON, or Manichord, a muſical inſtrument reſembling a ſpinnet; the ſtrings of which, like thoſe of the clarichord, are covered with little pieces of cloth, to deaden as well as to ſoften their ſound; whence it is alſo called the dumb ſpinnet. It is much uſed in nunneries, becauſe the nuns may play upon it without diſturbing that ſilence which they are obliged to obſerve in their cells.

MANIFESTO, a public declaration made by a prince in writing, ſhewing his intentions to begin a war, or other enterprize, with the motives that induce him to it.

MANILLE, in commerce, a large braſs ring in the form of a bracelet, either plain or engraven, flat or round. Manilles are carried by the Europeans to the coaſt of Africa and exchanged for ſlaves. Theſe people wear them as ornaments on the ſmall of the leg, and on the thick part of the arm above the elbow.

MANIPULUS, among phyſicians, ſignifies a handful of herbs or leaves, or ſo much as a man can graſp in his hand at once; which quantity is frequently denoted by the abbreviature, M, or *m*.

MANNA, in the materia medica, a ſweet juice obtained from certain aſh trees in the ſouthern parts of Europe, particularly in Calabria and Sicily; exuding from the leaves, branches, or trunk of the tree, and either naturally concreted, or exſiccated and purified by art. Juices of the ſame nature are collected, in the Eaſtern countries, from other trees and ſhrubs: and ſimilar exudations are ſometimes found on different kinds of trees in Europe, particularly on the larch in the Briançonois in Dauphiny. How far the manna juices of different vegetables differ from one another, is not well known; but this much is certain, that one and the ſame tree affords mannas very conſiderably different, in their colour, in their taſte, and in their diſpoſition to aſſume a ſolid concrete form: that is, in their purity, or the greater or leſs admixture of oily or reſinous matter.

The beſt ſort of the officinal or Calabrian manna is in oblong pieces or flakes, moderately dry, friable, very light, of a whitiſh or pale yellow colour, and in ſome degree tranſparent. The inferior kinds are moiſt, unctuous and brown. Both ſorts are ſaid to be ſometimes counterfeited by compoſitions of ſugar, honey, and purgative materials: compoſitions of this kind, in a ſolid or dry form, may be diſtinguiſhed by their weight, compactneſs, and untranſparency; both the dry and moiſt compoſitions may be diſtinguiſhed by their taſte, which is ſenſibly different from that of true manna, and with greater certainty by their habitude to menſtrua.

Manna, in doſes of an ounce and upwards, proves a gentle laxative: it operates in general with great mildneſs, ſo as to be ſafely given in inflammatory or acute diſtempers, where the ſtimulating purgatives have no place. It is particularly proper in ſtomachic coughs, or thoſe which have their origin in the ſtomach; the manna, by its ſweetneſs and unctuoſity, contributing to obtund as well as to evacuate the offending humours: in this intention it is ſometimes made into a linctus or lohoch, with equal quantities of oil of almonds and of ſyrup of violets.

In ſome conſtitutions, however, it acts unkindly, eſpecially if given in conſiderable quantity, occaſioning flatulencies, gripes, and diſtenſions of the belly; inconveniences which may be generally obviated by a ſmall addition of ſome grateful aromatic.

MANNER, in painting, a habitude acquired in the three principal parts of painting, the management of colours, lights, and ſhadows, which is either good or bad, according as the painter has practiſed more or leſs after the truth, with judgment and ſtudy. But the beſt painter is he who has no manner at all. The good or bad choice he makes is called goute.

MANNERS, in poetry, the inclinations, genius, and humour, which the poet gives to his perſons, and whereby he diſtinguiſhes his characters. See CHARACTER.

MANOMETER, or MANOSCOPE, an inſtrument to ſhew or meaſure the alterations in the rarity or denſity of the air.

MANOR, an ancient royalty or lordſhip, formerly called a barony, conſiſting of demeſnes, ſervices, and a court-baron; and comprehending in it meſſuages, lands, meadow, paſture, wood, rents an advowſon, &c. It may contain one or more villages, or hamlets, or only a great part of a village, &c. A manor is a noble kind of fee, granted in part to tenants for certain ſervices to be performed, and partly reſerved to the uſe of the lord's family, with juriſdiction over the tenants, for their farms or eſtates. There are capital manors or honours that have other manors under them; and alſo cuſtomary manors granted by copy of court-roll, the lords of which have power to hold courts, and grant copies, &c

MANSION, in law, the chief dwelling-houſe of a lord within his fee, or the capital meſſuage or manor-houſe.

* **MANSION-HOUSE**, for the reſidence of the lord-mayors of London was founded October 23, 1739; and inhabited in 1752.

MANSLAUGHTER, killing a perſon without premeditated malice.

MANTLE, or MANTLE-TREE, in architecture, the lower part of the chimney, or that piece of timber which is laid acroſs the jaumbs, and ſuſtains the compartment of the chimney-piece. See CHIMNEY.

MANTLE, or MANTLING, in heraldry, that appearance of folding of cloth, flouriſhing or drapery, in any atchievement drawn about the coat of arms. It is ſuppoſed originally to be the repreſentation of a mantle, or military habit, worn by the ancient cavaliers over their armour to preſerve it from ruſt. The mantle is always ſaid in blazonry, to be doubled, that is, lined throughout with one of the furs, as ermin, pean, vary, &c.

* **MANTUAN**, a duchy in Italy, bounded on the north by the Veroneſe, on the weſt by the Cremoneſe, on the ſouth by the duchies of Reggio, Modena, and Mirandola; and on the eaſt by the Ferrareſe. It is fifty miles long, and forty broad. The river Po, which runs through this duchy, procures it very conſiderable advantages, but at the ſame time often does conſiderable damage by overflowing its banks. It produces but little wine, but has very fine flax, corn, ſilk, paſtures, and excellent fruit The revenues of the ſovereign are computed at three hundred thouſand crowns a year. It was enjoyed by the family of Gonzaga, till the laſt duke, adhering to the French and Spaniards, was put under the ban of the empire, and the duchy was ſeized upon as a forfeited fee; and the duke dying in 1708, without heirs, the emperor Charles VI. took it into his own poſſeſſion, though the inveſtiture was demanded by the duke of Guaſtalla as the neareſt relation. After the death of that emperor, in 1740, the archducheſs, his eldeſt daughter, queen of Hungary, kept it in her own hands as heireſs of the houſe of Auſtria.

MANTUA, the capital of the duchy of the ſame name, is ſeated in the middle of a lake formed on the river Mincio. The way into the city is by two bridges over the lake which ſurrounds it. It is a very large city, having eight gates, eighteen pariſhes, forty religious houſes for both ſexes, a quarter poſſeſſed by the Jews, and above ſixteen thouſand inhabitants. The ſtreets are broad and ſtrait, and the houſes well built, among which are a great number of palaces. Mantua is now one of the ſtrongeſt places in Europe, for which reaſon the allies durſt not undertake the ſiege in 1734, though they were in poſſeſſion of a conſiderable part of the duchy. They have a manufactory of ſilk, which is much decayed. The famous poet Virgil was born at the village of Andes, about two miles from Mantua, and Taſſo was born within the walls. The biſhopric is immediately ſubject to the pope. Beſides the lake it is ſurrounded by a moraſs, which renders it extremely difficult of acceſs. It is thirty-four miles north-eaſt of Parma, twenty weſt of Verona, and ninety north-by-weſt of Florence. Long 11. 20. E. Lat. 45. 31. N.

MANUFACTURER, one who works up a natural product into an artificial commodity.

MANURE, any thing uſed for fattening and improving land. There are various kinds of manure uſed in different parts of England for enriching the ſeveral ſoils, ſome of which have been already mentioned under the articles dung, chalk, lime, clay, &c which ſee: but there are others that might be uſed on many lands with ſucceſs.

MANUSCRIPT, a written book, in contradiſtinction to a printed one. See BOOK.

MAP, a plane figure repreſenting the ſurface of the earth, or a part thereof, according to the laws of perſpective; diſtinguiſhing the ſituation of cities, mountains, rivers, &c. In maps, theſe three things are eſſentially requiſite. 1. That all places have the ſame ſituation and diſtance from the great circles therein, as on the globe, to ſhew their parallels, longitudes, zones, climates, and other celeſtial appearances. 2. That their magnitudes be proportionable to the real magnitudes on the globe. 3. That all places have the ſame ſituation, bearing, and diſtance, as on the earth itſelf. Maps are either univerſal, which exhibit the whole ſurface of the earth; or particular, which exhibit ſome particular part thereof: each kind is called geographical or land-maps, in contradiſtinction to hydrographical or ſea-maps, repreſenting the ſeas and ſea-coaſts, properly called charts. As a map is a repreſentation of ſome part of the ſurface of the earth delineated upon a plane; the earth being round, no part of the ſpherical ſurface of it can be accurately exhibited upon a plane, and, therefore, ſome have propoſed the making of globular maps; for this purpoſe, a plate of braſs might be hammered, or at a leſs expence a piece of paſte-board might be formed into a ſegment of a ſphere, and covered on its convex ſide with a map projected in the ſame, as the papers of the common globes are: a map made in this method would ſhew every thing in the ſame manner, as it would be ſeen upon a globe of the ſame diameter with the ſphere upon the ſegment of which it was delineated: and, indeed, maps of this ſort would be in effect ſegments of ſuch a globe, but they are not in common uſe.

The modern general maps are ſuch as give us a view of an entire hemiſphere, or half of the globe; and are projected upon the plane of ſome great circle, which terminates the projected hemiſphere, and divides it from the other half of the globe, as the equator, or the meridian, or horizon of ſome place: from this circle the projection is denominated, and ſaid to be equatorial, meridional, or horizontal.

Particular maps are ſuch as exhibit to us leſs than an hemiſphere; of this ſort are maps of the great parts into which the earth is divided, as Europe, Aſia, Africa, North-America, South-America; or maps of particular kingdoms, provinces, countries, or of leſſer diſtricts.

The meridional projection ſuppoſes the eye to be in ſome point of the equator, and from thence to view the oppoſite concave hemiſphere, projected upon a glaſs plane paſſing through ſome meridian, which a meridian drawn through the eye cuts at right angles. Thus plate XXXII. is a map of the earth in two hemiſpheres, projected upon the plane of a meridian paſſing through one of the Canary-iſlands called Ferro. This meridian is made choice of, becauſe, by making the projection thereon, one hemiſphere contains Europe, Aſia, and Africa; and the other North and South America. Here all the meridians are arches of circles, except that drawn through the eye, which is a ſtraight line; and all the parallels are arches of circles, and the equator is a ſtraight line.

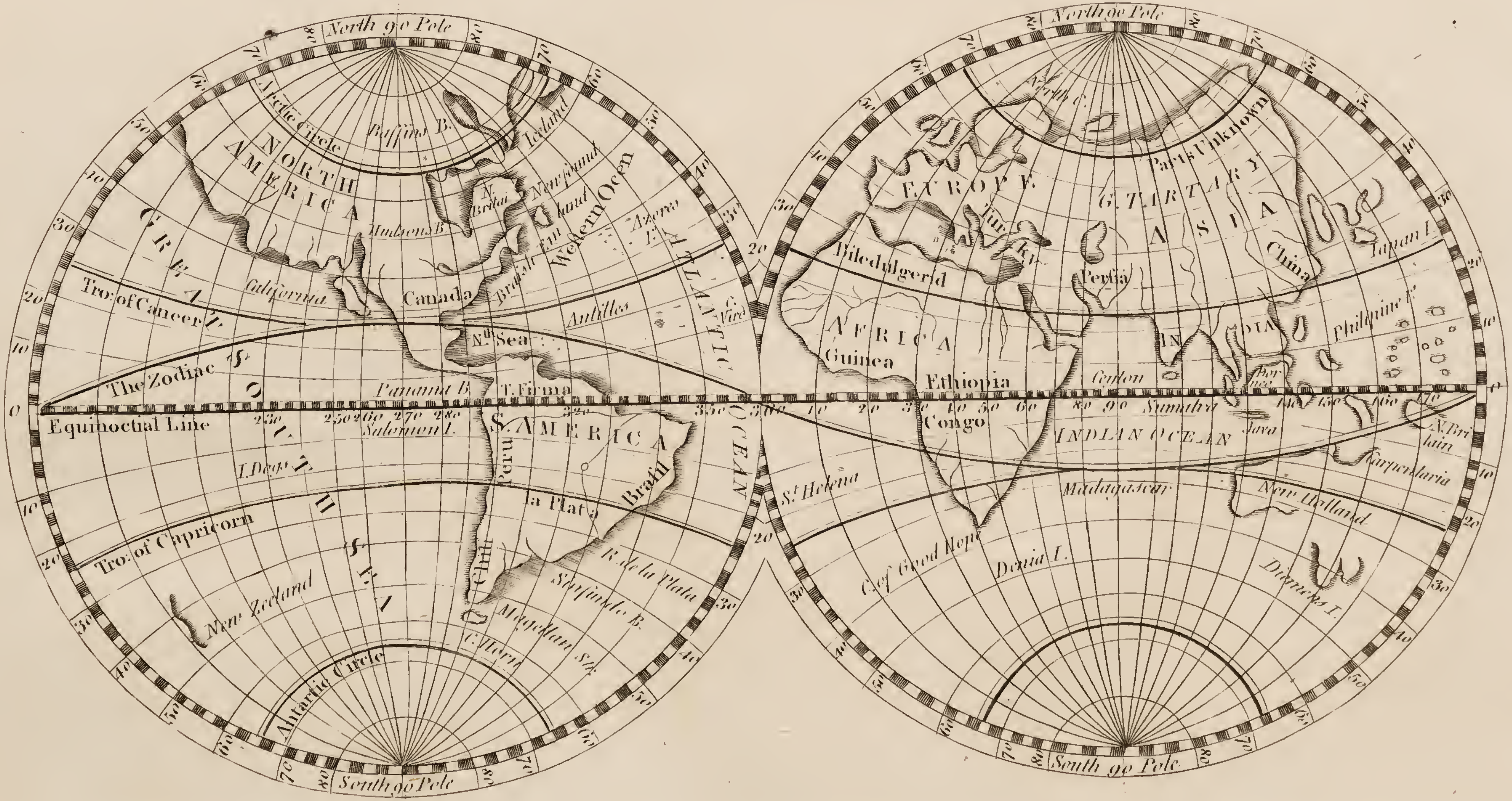
The uſe of maps is obvious from their conſtruction. The degrees of the meridians and parallels ſhew the longitude and latitude of places; their bearings from each other appear from inſpection; and their diſtances may be meaſured by the diviſions on the meridian, equator, &c.

MAPLE, *Acer*, in botany, a genus of plants, the flower of which is compoſed of five oval petals; the fruit conſiſts of a number of capſules, which grow together at the baſe; and are compreſſed, roundiſh, and each terminated by a very large membranous alla; the ſeeds are ſingle and roundiſh.

Great MAPLE, *acer majus*, improperly called ſycamore, a large tree with pentangular ſerrated leaves; producing ſmall greeniſh flowers, and a fruit compoſed of two capſules, including, each, a whitiſh ſeed at the end where they are joined, and

Plate XXXII.

Facing Map



ſpreading at the oppoſite end into a membranous wing. It is a native of the mountains of Switzerland and Auſtria, and now common in England. Theſe trees are propagated by ſowing the ſeeds, ſoon after they are ripe, in an open bed of common earth, covering them about half an inch thick, with ſandy light earth: the ſpring following they will appear above ground, and, if kept clear from weeds, will grow above a foot high the firſt ſummer: the Michaelmas following, if they are thick in the ſeed-bed, you may take out a part of them, and tranſplant into a nurſery, in rows at three feet diſtance, and two feet aſunder in the rows; in which place they may remain three or four years, when they will be large enough to plant out for good. The timber of the common maple is far ſuperior to the beech for all uſes of the turner, particularly diſhes, cups, trenchers, and bowls; and when it abounds with knots, as it often does, it is highly eſteemed by the joiners for inlayings, &c. and alſo, for the lightneſs of the wood, is often employed by thoſe that make muſical inſtruments; and, for its whiteneſs is in great requeſt for tables. All the parts of the maple contain a ſweet ſaccharine juice; which exuding on the ſurface of the leaves, renders them ſubject to be preyed on by inſects. The roots, trunk, or branches, wounded early in the ſpring, bleed a large quantity of clear liquor; which, in its dilute ſtate, taſtes ſomewhat ſweetiſh; and, on being inſpiſſated, yields a brown-coloured concrete ſugar, with a ſyrupy matter reſembling melaſſes, the juice unboiled has been drank as an anti-ſcorbutic. The ſugar and melaſſes which are leſs ſweet than thoſe extracted from the ſugar-cane, and whoſe ſweetneſs is likewiſe ſomewhat different in kind, are ſuppoſed to be more medicinal in diſorders of the breaſt. Conſiderable quantities of this ſugar, made from a ſpecies of maple in Canada, are imported for that uſe into ſome parts of Europe, particularly France.

MARBLE, *Marmor*, in natural hiſtory, a genus of foſſils, being bright and beautiful ſtones, compoſed of ſmall ſeparate concretions, moderately hard, not giving fire with ſteel, fermenting with, and ſoluble in acid menſtrua, and calcining in a ſlight fire.

The colours of marbles being a very obvious and ſtriking character, they are arranged according to them, in the following diviſions. 1. Of the white plain marbles there are two ſorts; the Parian marble of the ancients, and ſtatuary marble of the moderns, an extremely bright and elegant marble; and the Carrara marble; a very fine marble, more compact and cloſe than the former, but leſs bright. 2. Of the plain yellowiſh marbles there is only one ſort, which is a hard, pale yellow, and gloſſy marble, found in many parts of Italy. 3. Of the bluiſh and black marbles there are a great many ſpecies, as the Chian marble, Baſaltes, &c. 4. Of the plain green marbles there is only one kind, the Lacedemonian marble of the ancients. 5. The pale-coloured or whitiſh brown, commonly called Darby marble. 6. The green marbles with ſhells. 7. The black Coralloide marble, with and without ſhells. 8. Of the white variegated marble there are a great many ſpecies, variegated with purple, brown, red, blue, &c. 9. Of the brown variegated marbles there are likewiſe ſeveral ſorts, ſome with red veins; others with white, black, or brown veins. 10. Of the yellow veined and variegated marbles ſome are veined with purple, and others with blue. 11. Of the black variegated marbles, ſome are veined with white, and others with blue, yellow, red, &c. 12. The green variegated marbles are likewiſe diſtinguiſhed by the colour of their veins. 13. The grey ſpotted marbles are variegated, ſome with black and others with green ſpots. 14. The red variegated marble is the Brocatello of the Italians, with white and gold veins.

Poliſhing of MARBLE is performed by firſt rubbing them well with a free-ſtone, or ſand, till the ſtrokes of the axe are worn off, then with pumice-ſtone, and afterwards with emery.

Colouring of MARBLE. The colouring of marble is a nice art, and in order to ſucceed in it, the pieces of marble, on which the experiments are tried, muſt be well poliſhed, and clear from the leaſt ſpot or vein. The harder the marble is, the better it will bear the heat neceſſary in the operation; therefore, alabaſter and the common ſoft white marble are very improper to perform theſe operations upon. Heat is always neceſſary for the opening the pores of the marble, ſo as to render it fit to receive the colours; but the marble muſt never be made red-hot, for then, the texture of the marble itſelf is injured, and the colours are burnt, and loſe their beauty. Too ſmall a degree of heat is as bad as too great; for in this caſe, though the marble receive the colour,

lour, it will not be fixed in it, nor ſtrike deep enough. Some colours will ſtrike even cold, but they are never ſo well ſunk in as when a juſt degree of heat is uſed. The proper degree is that which without making the marble red, will make the liquor boil upon its ſurface. The menſtruums uſed to ſtrike in the colours, muſt be varied according to the nature of the colour to be uſed. A lixivium made with horſe's or dog's urine, with four parts quick-lime, and one part pot-aſhes, is excellent for ſome colours; common ley of wood-aſhes does very well for others: for ſome, ſpirit of wine is beſt; and, for others, oily liquors, or common white-wine.

The colours which have been found to ſucceed beſt with the peculiar menſtruums, are theſe: ſtone-blue diſſolved in ſix times the quantity of ſpirit of wine, or of the urinous lixivium; and that colour which the painters call litmouſe, diſſolved in common ley of wood-aſhes. An extract of ſaffron, and that colour made of buckthorn berries, and called by the painters ſap green, both ſucceed well diſſolved in urine and quick-lime, and tolerably well in a ſpirit of wine. Vermilion and a fine powder of cochineal, ſucceed alſo very well in the ſame liquors. Dragon's blood ſucceeds very well in ſpirit of wine, as does alſo a tincture of logwood, in the ſame ſpirit. Alkanet root gives a fine colour, but the only menſtruum to be uſed for this is oil of turpentine: for neither ſpirit of wine, nor any lixivium, will do with it. There is another kind of ſanguis draconis called dragon's blood in tears, which, mixed with urine alone, gives a very elegant colour. *Philoſ. Tranſact.* N° 268.

Beſides theſe mixtures of colours and menſtruums, there are ſome colours which are to be laid on dry and unmixed. Theſe are dragon's blood, of the pureſt kind, for a red; gamboge for a yellow; green-wax for a green; common brimſtone, pitch, and turpentine, for a brown colour. The marble, for theſe experiments, muſt be made conſiderably hot, and then the colours are to be rubbed on dry in the lump. Some of theſe colours, when once given, remain immutable; others are eaſily changed or deſtroyed. Thus the red colour given by dragon's blood, or by a decoction of logwood, will be wholly taken away by oil or tartar, and the poliſh of the marble not hurt by it.

A fine gold colour is given in the following manner: take crude ſal armoniac, vitriol, and verdigriſe, of each equal quantities; white vitriol ſucceeds beſt, and all muſt be thoroughly mixed in fine powder.

The ſtaining of marble to all the degrees of red or yellow, by ſolutions of dragon's blood or gamboge, may be done by reducing theſe gums to powder, and grinding them, with the ſpirit of wine, in a glaſs mortar; but, for ſmaller attempts, no method is ſo good as the mixing a little of either of theſe powders with ſpirit of wine, in a ſilver ſpoon, and holding it over burning charcoal. By this means a fine tincture will be extracted, and, with a pencil dipped in this, the fineſt traces may be made on the marble, while cold, which, on the heating it afterwards, either on ſand, or in a baker's oven, will all ſink very deep, and will remain perfectly diſtinct in the ſtone.

Arundelian MARBLES, ancient marbles with a chronicle of the city of Athens inſcribed on them, many years before our Saviour's birth; preſented to the univerſity of Oxford by Thomas earl of Arundel; whence the name.

MARBLING, the method of preparing and colouring the marbled paper. There are ſeveral kinds of marbled paper; but the principal difference of them lies in the forms in which the colours are laid on the ground: ſome being diſpoſed in whirles or circumvolutions; ſome in jagged lengths; and others only in ſpots of a roundiſh or oval figure. The general manner of managing each kind is, nevertheleſs, the ſame; being the dipping the paper in a ſolution of gum tragacanth, or, as it is commonly called, gum-dragon; over which the colours, previouſly prepared with ox-gall and ſpirit of wine, are firſt ſpread.

Marbling of books or paper is performed thus: diſſolve four ounces of gum arabic into two quarts of fair water; then provide ſeveral colours mixed with water in pots or ſhells, and with pencils peculiar to each colour, ſprinkle them by way of intermixture upon the gum-water, which muſt be put into a trough, or ſome broad veſſel; then with a ſtick curl them, or draw them out in ſtreaks, to as much variety as may be done. Having done this, hold your book or books cloſe together, and only dip the edges in, on the top of the water and colours, very lightly; which done, take them off, and the plain impreſſion of the colours in mixture will be upon the leaves; doing as well the ends as the front of the book in the like manner.

Marbling a book on the covers is performed by forming clouds with aqua fortis, or ſpirit of vitriol mixed with ink, and afterwards glazing the covers. See *Book Binding*.

MARCASITES, *Marchaſitæ*, in natural hiſtory, compound inflammable metallic bodies of a hard and ſolid ſubſtance, of an obſcurely and irregularly foliaceous ſtructure, of a bright glittering appearance, naturally conſtituting whole ſtrata, though ſometimes found in detached maſſes; very freely giving fire with ſteel; not fermenting with acid menſtruums; and when put into the fire, yielding a blue ſulphureous flame, and afterwards calcining into a purple powder. There are only three known ſpecies of this genus: 1. The ſilver-coloured marcaſite, found in vaſt abundance in lead and tin-mines. 2. The gold coloured marcaſite. 3. The heavy pale-white marcaſite. Marcaſites were at firſt ſuppoſed to be almoſt all pure gold or ſilver, according to their colour; but experience has ſhewn, that if they contain any metal at all, no method has hitherto been found of working them to advantage. In Germany, indeed, they extract ſulphur and vitriol from the ſilver marcaſite, which two ſubſtances are always contained in it; and beſides theſe, it has uſually a quantity of arſenic. It has been recommended as a ſtyptic, after being calcined; but as the arſenic may not be all carried off by that operation, its uſe as a medicine ſeems extremely dangerous.

MARCGRAVE, or MARGRAVE, a degree of honour in Germany correſponding to our marquis. *See Marquis*

MARCH, in chronology, the third month of the year, conſiſting of thirty-one days.

MARDIKERS, or TOPASSES, a mixed breed of Dutch, Portugueſe, Indians, and other nations, incorporated with the Dutch at Batavia, in the Eaſt Indies.

MARE, the female of the horſe-kind. Such mares as are deſigned for breeding, ſhould be as free from defects as poſſible, and ſhould, no more than the ſtallions, have either moon-eyes, watery eyes, or blood ſhot-eyes; they ſhould have no ſplint, ſpavin, or curb, nor any natural imperfection: for the colts will take after them: but choice ſhould be made of the beſt and ableſt, the moſt high-ſpirited, beſt coloured, and fineſt ſhaped; and the natural defects that may be in the ſtallion, ſhould be amended in the mare, as well as that which is amiſs in the mare ſhould be amended in the ſtallion.

* MARGARET *of Anjou*, afterwards queen of England, was the daughter of Rene of Anjou, king of Sicily, Naples, and Jeruſalem, and was born the 23d of March, 1429. Henry VI. fell in love with her, on ſeeing her picture, and though her father did not poſſeſs an inch of land in the three kingdoms whence he received his titles, he reſolved to marry her; and inſtead of receiving a fortune with this lady, gave her father the duchy of Anjou and the county of Maine, provinces which then belonged to England. The marriage was celebrated at Nancy, in 1444, with great magnificence; after which Margaret immediately embarked for England, and was received with as great marks of joy. She was crowned at Weſtminſter. the 30th of May, 1445: and the duke of Glouceſter, the king's uncle, governing the kingdom for the young king, and being beloved of the people, ſhe had him accuſed of ſeveral crimes, thrown into the Tower, and privately murdered. Margaret then took upon herſelf the adminiſtration of affairs, and choſe for her aſſiſtant the earl of Suffolk, whom ſhe created a duke: that nobleman, who had been the agent of her marriage, had ever ſince enjoyed her moſt intimate confidence, but was hated by the people, who attributed the death of the duke of Glouceſter to him; and being impeached by the houſe of commons, the queen made him embark privately for France, but he was murdered in his paſſage, and the duke of Somerſet ſucceeded him in the queen's favour. The duke of York, who had juſt pretenſions to the crown of England, being deſcended from Richard II. to try the diſpoſition of the people, ſet up one Cade, who aſſumed the name of Mortimer, earl of Marche, who had been beheaded: this pretender defeated the troops that oppoſed him, the king retired into Kenelworth-caſtle, and Cade entered London without reſiſtance; but the king, publiſhing an amneſty, Cade was abandoned by all his men in one night, and ſoon after killed by a gentleman of Kent. Sometime after the queen was brought to bed of a prince, who was named Edward; and to perſuade the people that they intended to correct the diſorders that had crept into the adminiſtration, the duke of York was invited to court; where having twice appeared, he cauſed the duke of Somerſet to be arreſted in the queen's chamber, and ſent to the Tower; he then vindicating what he had done

before the parliament, was declared lord protector of the kingdom, during the minority of the young prince. This ſtruck the queen with conſternation. She at firſt ſeemed to ſubmit, till at length the duke of York being called to appear before an extraordinary council, was, to his great ſurpriſe, informed that the king having recovered his health, his office of protector, which was only founded on the king's weakneſs, ceaſed of courſe. He perceived that this was only an artifice of the queen, to get the government into her hands; and the firſt effect of this change, was the releaſe of the duke of Somerſet, who, with the queen, were maſters of the king's perſon. Upon this the duke raiſed an army in Wales, and a battle was fought at St. Albans; where the bravery of the earl of Warwick, who commanded the vanguard, obtained an entire victory. Somerſet was ſlain, the king taken priſoner, and conducted by the duke to London. The parliament now declared the duke of York protector of England, and Margaret retired almoſt alone to Greenwich, but ſoon regained her authority by the ſame ſtratagem, the pretended recovery of the king. After which ſhe took a tour through ſeveral counties, in order to gain the reſpect and love of the people, by her condeſcending and obliging behaviour. While the queen was rejoicing at the retreat of her enemies, a terrible ſtorm was formed againſt her. The earl of Saliſbury and the earl of Warwick, raiſed an army in Kent, and without mentioning the duke of York, declared by a manifeſto, that they took up arms merely to ſecure the liberties and privileges of the people. This procured them an army of 40,000 men; and a bloody battle was fought the 19th of July, 1460, in which the queen fled with the young prince of Wales, and the duke of Somerſet; while the king, who had not left his tent, was taken by the earl of Warwick, and conducted to London. The earl of Saliſbury now ſent to Ireland, to invite the duke of York to come and take poſſeſſion of the crown; but on his arrival at London, he did not find the parliament ready to ſecond his deſigns: but an act was paſſed by the two houſes, that Henry, during his life, ſhould continue in poſſeſſion of the throne, and be ſucceeded by the duke. Margaret, while her ſon was thus deprived of his claim to the crown, was at Durham, with a retinue compoſed of eight perſons, who were rather domeſtics than counſellors. She had ſent the duke of Somerſet into France to ſollicit ſuccours. She was without money, without an army, and almoſt without hope; and in this deplorable ſituation ſhe received orders to return to London. In this dilemma, ſhe haſtily left Durham, after having ſpread the report that ſhe was going to France, and went to the eſtate of the lords Roſs and Clifford, in Yorkſhire, travelling chiefly in the night; and by their aſſiſtance, together with that of the earl of Devonſhire, ſhe raiſed an army of 25,000 men, with which ſhe encamped near Wakefield. The duke of York and earl of Saliſbury marched againſt her with 20,000 men; but not daring to keep the field, ſhut themſelves up in Sendal-caſtle, waiting for the arrival of the forces the earl of March was to bring from Wales. The queen inceſſantly defied him, and reproached him who could venture to aſpire to the throne, with cowardly hiding himſelf for fear of a woman; and then poſted 15,000 men behind a hill. The duke thinking that her forces were divided, marched out; but ſoon perceived his imprudence, and died fighting like a lion. His head being afterwards cut off, the queen had it placed by her, and having kept it the reſt of the day, cauſed it to be fixed on the walls of York. The earl of Saliſbury, who had been taken priſoner, was by the queen's order, beheaded. The earl of Warwick, who ſtaid in London to guard the king, now advanced to meet the queen, and obliged the king to go with him; but the queen put the earl to flight, and the king recovered his liberty. But Warwick joining the earl of March, adviſed him to go directly to London, and be crowned there; he did ſo; and was proclaimed king the next day in that city, under the name of Edward IV. on which the Queen, who thought to have entered the capital in triumph, found herſelf plunged in new misfortunes. Edward immediately marched towards York, where he was informed that Henry and Margaret expected him, and the two armies meeting, a bloody battle was fought on Palm Sunday, in which the bravery of the earl of Warwick fixed the victory, and it is ſaid the number of the ſlain amounted to 40,000. She fled, with her huſband, into Scotland; from whence ſhe ſailed to France, and met with a kind reception from Lewis XI. She afterwards returned to the mouth of the Tweed with only 500 men, with which ſhe took Berwick. The king of Scotland permitted her to raiſe ſome troops in his dominions; and Henry now employed himſelf in forming an army, and advanced towards Hexham, where the marquis of Montagu, one of Edward's generals, attacked him in his lines, killed the beſt part of his men, and put the reſt to flight. The unhappy Henry fled to Scotland, and Margaret, with her ſon, eſcaped on foot to the borders of a wood, where ſhe was overtaken by night. In that wood, it is ſaid, ſhe was met by robbers, who took from her her jewels, which were all ſhe had left; but while they were diſputing about the booty, ſhe eſcaped from them with her ſon, and entered the thickeſt part of the foreſt: and the prince being tired and unable to walk, ſhe took him in her arms, and proceeded forward. Another robber, who was going to meet the above gang, to which he belonged, ſoon met her with his ſword in his hand. Margaret, in this extremity, rouſed up her courage, and holding out the prince towards him, ſaid, "Friend, ſave the king's ſon." At her mentioning the king, the ſword dropped from his hand: he offered his ſervice, and took the prince, whom ſhe could no longer carry; then led her to a neighbouring village, where was his houſe and family. Margaret ſtaid there ſome days, where ſhe privately informed herſelf of the conſequences of the battle of Hexham, and was joined by the ſeneſchal of Normandy, the duke of Exeter, and Edmund the duke of Somerſet's brother, who took her to Carliſle; where ſhe found a bark, in which ſhe went to Kirkbridge, and lodged with an Engliſhman named Cork, who knew and betrayed her; but ſhe was ſaved by the valour of the Seneſchal, and got to Edinburgh. There ſhe learned that her huſband having imprudently left Scotland, had fallen into the hands of his enemies, and was confined in the Tower of London: on which ſhe a ſecond time repaired to the court of France, where ſhe found aſſiſtance which ſhe did not expect. Edward had ſent the earl of Warwick as his ambaſſador, to demand Lewis XIth's daughter in marriage; that king had given his conſent, and Warwick had ſent his maſter an account of his ſucceſs; when he was informed, that in his abſence Edward had married Elizabeth Widvill. The earl, enraged at this affront, reſolved to be revenged, and coming to England, ſoon appeared at the head of an army. Edward ſpeedily marched againſt him; but the earl ſurpriſed him in his camp, and took him priſoner. He intruſted the care of Edward to his brother the biſhop of York; but that prelate letting him eſcape, he returned to London with the acclamations of his friends. The earl of Warwick now retiring to France, Margaret met him at Dieppe, and there an interview extinguiſhed their mutual reſentments; and they united their intereſts by the marriage of the prince of Wales with Anne Nevill, the earl's daughter. From this moment he reſolved to replace Henry on the throne. Lewis furniſhed him with 4000 men, and ſhips to convey them to England, and with theſe he landed at Dartmouth. Immediately thoſe of his party flocked to him on all ſides, and ſoon had an army of 60,000 men. Edward, alarmed at this news, now fled to Holland, and Margaret entered London amidſt the acclamations of the people. The misfortunes ſhe had ſuffered filled her mind with ſenſibility, and ſhe treated Elizabeth, Edward's wife, with all the reſpect due to her as the wife of a king. Edward, returning again to England, had ſoon a great army; marched towards London, and was received there with joy. The earl of Warwick marched there to attack him, but was defeated, and loſt his life at Barnet. The lords of Margaret's party revived her hopes, and formed a new army, which no ſooner came to the ears of Edward, than he marched with all his troops, and defeated the queen's army, which was commanded by the duke of Somerſet. That duke, with the queen and prince of Wales, were made priſoners, and the latter barbarouſly murdered in the king's tent. Margaret's grief was inexpreſſible. In the firſt tranſports of her rage, ſhe uttered invectives againſt Edward that had like to have coſt her her life: but Edward, after much deliberation, at length reſolved to be ſatisfied with confining her in the Tower of London, where ſhe remained five years. At length, by the ſollicitation of Lewis XI. ſhe obtained her liberty: but on leaving her priſon, ſhe was obliged to renounce her dowry, her jewels, and every thing ſhe had a right to claim as queen dowager of England. Rene, her father, to engage Lewis to ſolicit for her liberty, had yielded to France all his rights to Provence, Anjou, and the duchies of Lorrain and Bar: thus Margaret found herſelf ſtripped at the ſame inſtant, not only of all which an eſtabliſhed right had granted her in England, but of all the advantages derived from her birth, ſhe being the only heireſs of the houſe of Anjou. She reſided at Aix with her father, and, after his death, retired to the caſtle of Dampierre, in Anjou, which belonged to an old gentleman, named Vignole, who had ſpent his life in her father's ſervice. She there contracted a cloſe intimacy with the earl of Richmond, afterwards Henry VII. and was in the centre of all the intrigues formed againſt Edward in favour of that prince, but did not live to ſee him raiſed to the throne, ſhe dying on the 25th of Auguſt, 1482.

MARJORAM, *Majorana*, in botany, &c. See *Majorana*.

MARITIME, relating to, or bounded by the ſea: thus, a maritime province or country, is one bounded by the ſea; and a maritime kingdom, or ſtate, is one that makes a conſiderable figure, or is very powerful at ſea.

MARK, in commerce, a certain note which a merchant puts upon his goods, or upon the hogſhead, &c. that contains them, in order to diſtinguiſh them from others

ST. MARK *the Evangeliſt's Day*, a feſtival of the Chriſtian church, obſerved April 25.

ST. MARK's *Goſpel*, a canonical book of the New Teſtament, being one of the four Goſpels. St. Mark wrote his Goſpel at Rome, where he accompanied St. Peter, in the year of Chriſt 44. Tertullian and others pretend, that St. Mark was only an amanuenſis to St. Peter, who dictated this Goſpel to him; others affirm, that he wrote it after St. Peter's death. Nor are the learned leſs divided as to the language this Goſpel was wrote in; ſome affirming it was compoſed in Greek, others in Latin. Several of the ancient heretics received only the Goſpel of St. Mark; others among the Catholics rejected the twelve laſt verſes of this Goſpel. The Goſpel of St. Mark is properly an abridgment of that of St. Matthew. St. Mark is ſaid to have written his Goſpel in the year 43, after which he went to propagate the faith in Egypt, where he founded the church of Alexandria, of which he was the firſt biſhop, and died in that city about the year 62.

Knights of St. MARK, an order of knighthood in the republic of Venice under the protection of St. Mark the Evangeliſt. The arms of the order are, gules, a lion winged, or; with this device, PAX TIBI MARCE EVANGELISTA. This order is never conferred but on thoſe who have done ſignal ſervice to the commonwealth.

MARK, or MARC, alſo denotes a weight uſed in ſeveral ſtates of Europe, and for ſeveral commodities, eſpecially gold and ſilver.

MARK is alſo uſed among us for a money of account, and in ſome other countries for a coin. The Engliſh mark is two thirds of a pound ſterling, or thirteen ſhillings and fourpence; and the Scotch mark is of equal value in Scotch money of account The mark-lubs, or Lubeck mark, uſed at Hamburg, is alſo a money of account equal to one third of the rix-dollar, or to the French livre; each mark is divided into ſixteen ſols-lubs. Mark-lubs is alſo a Daniſh coin equal to ſixteen ſols-lubs. Mark is alſo a copper and ſilver coin in Sweden. See *Exchange*.

MARKET, a public place in a city or town, in which live cattle, proviſions, or other goods are expoſed to ſale.

MARLE, *Marga*, a kind of dry, ſoft, foſſile earth, uſed for manuring land. The word is derived from the old Celtic *Marga*, mentioned by Pliny. The principal ſorts of marle are the white and red. Too much of it thrown on the ground is found to burn it. Marle is burnt like other ſtone for making of lime. It is a very material circumſtance in the marling of land, to find out how much the land requires of this manure; and till experience has thoroughly ſhewn this, it is better to err in laying on too little than too much; becauſe the latter is a fault not to be remedied. It is to be obſerved alſo, that marle never makes ſo great an improvement on land the firſt year, as it does afterwards. In Staffordſhire they lay two hundred loads of marle upon an acre of land of the common kind; but where the ſoil is black, looſe, and ſandy, or full of worms, they will lay on three or four hundred loads to an acre; it being a rule with them, that this ſort of ſoil cannot be marled too much. If the mould be thin, the leſs marle does; if deep, it muſt have the more. It is beſt ſowing of marled lands under furrow; becauſe if theſe lands are well huſbanded, they will be very mellow and hollow, which will occaſion the earth's ſinking from the roots of the corn, if it ſtand too high. If marle fattens land, or makes it ſtiff or binding, it muſt be well dunged, and laid down for graſs. In Staffordſhire, after their land is marled, their way is to take the crops following After the firſt crop of wheat is off, they plow in the wheat ſtubble in December, and if the weather proves froſty, to mellow it, they do not plow it again till April. They then ſow it with barley, allowing three buſhels of ſeed to an acre. The common produce of this is thirty buſhels. After this they ſow peaſe, for which they plow once in the February following, allowing only three buſhels of ſeed to an acre, as in the barley. Next after this, if they intend ſix crops, they ſow wheat again upon the peaſe crop; the fifth crop is barley again; and the ſixth year's is red oats. Some ſow two or three crops more, when the ground has been well marled, but that is much better let alone. In digging for the marle they uſe in manuring the lands, in Ireland, they meet with foſſil horns, and other curious foſſils. The marle always lies in the bottom of low bogs. It is never met with in any other places, and is found by boring with augres made for that purpoſe. It uſually lies at five, ſeven, or nine feet depth.

Dice MARLE, in huſbandry, a name given by the people of Staffordſhire to a reddiſh marle, that breaks into ſmall ſquare pieces like dice, or elſe into thin flakes, in the manner of lead ore, and looks ſmooth on the ſurface.

* MARLI, a beautiful palace of France, between Verſailles and St. Germain, is ſeated on a valley, at the extremity of a foreſt of the ſame name. The gardens are extremely well laid out, and are in a charming ſituation. This palace was built by Lewis XIV. and is adorned on the outſide with paintings in freſco. The moſt remarkable things on the inſide are two globes of twelve feet in diameter, with all their furniture. The great caſcade in the garden is properly a river, which falling from on high, forms ſeveral ſheets of water; and below there are baſons, adorned with groups of figures; not to mention the ſtatues, fountains, and the variety of fine water-works. It is ten miles from Paris. Long. 2. 20. Lat. 48. 57. N.

MARMALADE, a confection of plums, appricots, quinces, &c. boiled with ſugar to a proper conſiſtence.

MARMOTTE, in zoology, the largeſt animal of the mus or rat kind, with a long naked tail and tawney body; it is almoſt as large as a hare, and breeds only on the tops of mountains in Switzerland. Its feet reſemble thoſe of a bear.

MARONITES, in church-hiſtory, a ſect of Chriſtians near mount Libanus in Syria, who are in communion with the church of Rome, and have their patriarch, archbiſhops biſhops, &c.

MARQUE, or *Letters of* MARQUE, in military affairs, letters of repriſal, granting the ſubjects of one prince or ſtate liberty to make repriſals on thoſe of another. Letters of marque, among us, are extraordinary commiſſions granted by authority, for reparation to merchants, taken and deſpoiled by ſtrangers at ſea; and repriſals is only the retaking or taking of one thing for another.

MARQUETRY, or INLAID-WORK, a curious work compoſed of ſeveral fine pieces of wood, of various colours, faſtened in thin ſlices on a ground, and ſometimes enriched with other matters, as ſilver, braſs, tortoiſe-ſhell, and ivory; with theſe aſſiſtances the art is now capable of imitating any thing; whence it is by ſome called the art of painting in wood.

MARQUIS, a title of honour, next to that of duke, firſt given to thoſe who commanded the marches, that is, the borders and frontiers of countries. Marquiſſes were not known in England till king Richard II. in the year 1337 created his great favourite, Robert Vere, earl of Oxford, marquis of Dublin; ſince which time there have been many creations of this ſort, though at preſent there is but one Engliſh and two Scotch marquiſſes. There is alſo a marchioneſs in her own right in England, viz. the marchioneſs de Grey. The manner of creating a marquis differs in nothing from that of a duke, except the difference of the titles, and the marquis's being conducted by a marquis and an earl, while a duke is led by a duke and a marquis; he is alſo girt with a ſword, has a gold verge put into his hand. and his robe or mantle is the ſame as thoſe of a duke, with only this difference, that a duke's mantle has four guards of ermine, and a marquis's only three and a half. The title given him, in the ſtyle of the heralds, is, Moſt noble and potent prince. His cap is the ſame as a duke's, and the difference between their coronets conſiſts in the duke's being adorned with only flowers or leaves, while the marquis's has flowers and pyramids with pearls on them, intermixed, to ſhew that he is a degree between a duke and an earl.

MARRIAGE, a contract both civil and religious, between a man and a woman, by which they engage to live together in mutual love and friendſhip, for the ends of procreation, &c.

MARROW, *Medulla*, in anatomy, has various ſignifications: the white ſubſtance of the brain, in contradiſtinction from the cortical part, is called the ſpinal marrow: but, properly, marrow denotes that ſoft oleaginous ſubſtance contained in the cavity of the bones. Every bone in the body, of any conſiderable thickneſs, has either a large cavity, or is full of little cells: in both the one and the other is marrow contained in proper veſicles that open into one another. In the larger bones this fine oil, by the gentle heat of the body, enters ſome narrow paſſages, which lead to certain fine canals excavated in the ſubſtance of the bone; and from theſe other croſs paſſages, not directly oppoſite to the former, carry the marrow ſtill farther into more longitudinal canals placed nearer the ſurface of the bone. All this contrivance is, that the marrow may ſupple the fibres of the bones, and render them leſs apt to break. By latter obſervations, blood-veſſels have been found in the bones, ſo that they are nouriſhed in the ſame manner as the other parts of the body. Beſides, we find that many bones grow, and yet have no marrow in them, as the horns of deer, lobſter claws, &c. All marrows are mollifying, rarefying, give relief by friction under laſſitudes, and incarnate ulcers.

MARRUBIUM, hoar-hound and baſtard dittany, a genus of plants, reputed attenuant and reſolvent, and accordingly preſcribed in moſt aſthmas, and in all diſeaſes of the breaſt and lungs. Formerly there uſed to be kept a compound ſyrup of it in the ſhops, but it is now out of uſe.

MARS, in aſtronomy, one of the ſuperior planets, moving round the ſun in an orbit between thoſe of the earth and Jupiter.

For the diameter of this planet, and its mean diſtance from the ſun, ſee *Diameter* and *Diſtance*. The character of this planet is ♂, the excentricity of its orbit is 141, ſuppoſing the diſtance of the earth from the ſun 1000 equal parts; the inclination of its orbit to that of the earth is 1° 51′; the periodical time in which it performs its revolution round the ſun, is 686 days, 23 hours, 27′ 30″; its revolution round its own axis 24 hours, 40′; and its parallax, 30″. See *Character*, *Excentricity*, &c. In the achronical riſing of this planet, that is, when it is in oppoſition to the ſun, it is found twice as near the earth as the ſun, which is a phænomenon that has greatly diſcredited the Ptolemaic hypotheſis. This planet, as well as the reſt, borrows its light from the ſun, and has its increaſe and decreaſe of light like the moon; and it may be ſeen almoſt biſſected when in its quadratures with the ſun, or in its perigæon: but is never corniculated or falcated, as the inferior planets. Dr. Hook, in 1665, obſerved ſeveral ſpots in this planet, which having a motion, he concluded the planet to have a turbinated motion round its center. In 1666, M. Caſſini obſerved ſeveral ſpots in the two hemiſpheres of Mars, which, by continuing his different obſervations very diligently, he found to move by little and little from eaſt to weſt, and to return in the ſpace of 24 hours 40′ to their former ſituation. Whence both the motion and period or natural day of that planet were determined. See *Maculæ*. Mars always appears with a ruddy troubled light, whence we conclude that it is encompaſſed with a thick cloudy atmoſphere, which by diſtributing the rays of light in their paſſage and re-paſſage through it, occaſion that appearance. Beſides the ruddy colour of Mars, we have another argument of his being encompaſſed with an atmoſphere, and it is this, that when any of the fixed ſtars are ſeen near his body, they appear extremely obſcured and almoſt extinct: and if this be the caſe, a ſpectator in Mars would ſcarce ever ſee Mercury, unleſs perhaps in the ſun at the time of conjunction, when Mercury paſſes over his diſk, as he ſometimes appears to us in the form of a ſpot. An eye in Mars will ſee Venus at about the ſame diſtance from the ſun as Mercury appears to us, and the earth about the ſame diſtance from the ſun that Venus appears to us; and when the earth is found in conjunction with and very near the ſun, the eye in Mars will ſee the earth horned or falcated, and its attendant, the moon, of the ſame figure, and utmoſt diſtance from the earth not above fifteen minutes of a degree: and as this planet's diſtance from the ſun is to the diſtance of the earth and ſun as 1½ to 1; therefore a ſpectator in Mars would ſee the ſun's diameter leſs by one third than it appeared to us, and conſequently the degree of light and heat which Mars receives from the ſun, is leſs by one third than that received by the earth; this proportion will, however, admit of a ſenſible variation, on account of the great excentricity of this planet.

Though the period or year of this planet, as has been already obſerved, is nearly twice as long as ours, and his natural day, or the time in which the ſun appears above his horizon, ſetting aſide the conſideration of twilight, is almoſt every where equal to his night; yet it appears that in one and the ſame place, on his ſurface, there will be but very little variety of ſeaſons, or ſcarce any difference of ſummer and winter: and the reaſon is, that the axis of his diurnal rotation is nearly at right angles with the plane of his orbit. It will be found, notwithſtanding, that places ſituated in different latitudes, that is, at different diſtances from his equator, will have very different degrees of heat, on account of the different inclination of the ſun's rays to the horizon, as it is with us when the ſun is in the equinoxes.

MARS, among chemiſts, denotes iron, as being ſuppoſed to be under the influence of that planet.

MARINE generally implies the whole navy of a kingdom or ſtate, comprehending all the royal dock-yards, and the officers, artificers, ſeamen, ſoldiers, &c. employed therein, as well as the ſhipping employed by the merchants for military or commercial purpoſes, together with whatever relates to navigation, ſhip-building, ſailors, and marines.

That the legiſlature of Great Britain has ever been attentive to this great and important object, will appear from the following account of the laws that have been enacted relating to the affairs of the Britiſh marine.

So early as 5 Rich. II. c. 3. it was enacted, that none of the king's ſubjects ſhould bring in or carry out any merchandize, but in Engliſh ſhips, on pain of forfeiting all the merchandize otherwiſe conveyed, or the value thereof; but 6 Rich. II. ordains, that the above ſtatute ſhall only take place where able ſhips belonging to the king's ſubjects are to be found; for where they are not to be had, the merchants are allowed to hire other ſhips. By 4 Hen. VII. c. 10. it was enacted, that no Gaſcoign or Guienne-wines, &c. ſhould be imported into this realm but in Engliſh veſſels: and that none ſhould freight any merchandize in any ſtranger's ſhip, if he could have ſufficient freight in a denizen's ſhip, under the penalty of forfeiting all merchandize not thus ſhipped, to be divided between the king and the ſeizer: but this act, ſo far as it related to the above wines, was repealed by the ſtatute 32 Hen. VIII. c. 14. and a rate was ordered of what ſhould be paid for the freight of the ſeveral ſorts of merchandize in ſhips, from the port of London to other places, and from thence to London. By 1 Eliz. c 13. it was enacted, that if the owner of any merchandize ſhould, in the time of peace, embark or unload any part thereof, (maſts, pitch, tar, and corn, only excepted) out of, or into any foreign ſhip, he ſhould pay cuſtom as an alien.

By the act of navigation, 12 Car. II. c. 18. it it enacted that no goods ſhall be imported into, or exported out of, any territories belonging to his majeſty, his heirs and ſucceſſors, in Aſia, Africa, or America, in any other ſhips beſides ſuch as belong to the people of England, Ireland, Wales, or the town of Berwick upon Tweed, and whereof the maſter and three fourths of the mariners are Engliſh, on pain of forfeiting both ſhip and lading, one third to the king, another to the governor of the country where ſuch default ſhall be, if ſeized there, otherwiſe that third alſo to the king, and the other third to him that will ſeize or ſue for the ſame. And commanders at ſea, having the king's commiſſion, are to bring in as prize all ſuch ſhips, and on their being condemned, one moiety is to be for the uſe of ſuch commanders and their companies, and the other moiety to the king. No goods of the growth or manufactures of Muſcovy, or of the produce of the Turkiſh empire, ſhall be imported into England, Ireland, &c. in any ſhip or veſſel not Engliſh built, or not belonging to the people of England, Ireland, &c. and navigated as aforeſaid; except veſſels built at the place from whence the goods came, or of ſuch port where they can only be, and uſually are ſhipped, on pain of forfeiting the ſhip and goods; and all wines of the growth of France and Germany, and diverſe goods and merchandize from Spain, Portugal, Ruſſia, &c. which ſhall be imported into the places aforeſaid, in any other ſhip than what belongs to England, Ireland, &c. and are navigated as aforeſaid, ſhall be deemed aliens goods, and pay accordingly. And no foreign-built veſſel ſhall paſs as a ſhip belonging to

England, Ireland, Wales, &c. till the owner makes it appear to the chief officer of the cuſtoms, in the port next to the place of his abode, that he is not an alien, and take an oath that it was *bona fide* bought of ſuch perſons, expreſſing the ſum given, and the time and place when and where, &c. and that no foreigner has a ſhare in it. Alſo none ſhall load in any bottom, if ſtrangers are owners, part-owners, or maſter, and of which three-fourths of the marines at leaſt are not Engliſh, any goods whatſoever from one port or creek of England, Ireland, Wales, Guernſey, Jerſy, or the town of Berwick, to another port of the ſame, on pain of forfeiting ſuch goods and veſſel.

By the 22d and 23d Car. II. c. 11. it is enacted, that where any goods ſhall be laden on board any Engliſh ſhip of the burden of two hundred tons, or upwards, and mounted with ſixteen guns, or more, if the maſter yields up ſuch ſhip or goods to any Turkiſh veſſel, or any pirate, without fighting, he ſhall be incapable of taking charge of any Engliſh veſſel: and maſters of Engliſh ſhips, though not of that burden, nor mounted as aforeſaid, that ſhall yield without fighting to a Turkiſh ſhip or pirate, that has not at leaſt double the number of guns, ſhall be liable to the penalties of this act. If any inferior officers or mariners of a ſhip, ſhall refuſe to fight when commanded, or utter words to diſcourage others, they ſhall loſe all their wages due, and be impriſoned not exceeding ſix months; and mariners laying violent hands on their commanders, to hinder them from fighting in defence of their ſhips, ſhall ſuffer death as felons. When any Engliſh ſhip ſhall have been defended by fight, and brought to her port, in which fighting any of her men have been wounded or ſlain, the judge of the admiralty, or his ſurrogate, &c. where ſhe ſhall arrive, upon the petition of the maſter and ſeamen, may call ſo many as he ſhall be informed are the adventurers and owners, and by adviſing with them, levy upon the reſpective owners ſuch ſums as he himſelf, and the major part of them preſent, ſhall judge reaſonable, not exceeding two per cent. of the ſhip and goods; which money ſhall be diſtributed among the maſter, officers, and ſeamen, or the widows and children of the ſlain, according to the direction of the judge, with the approbation of three or more of the adventurers. By the 5th and 6th of Will. and Mary, c. 24. every perſon who ſhall build, or cauſe to be built any ſhip of three decks, containing 450 tons, and mounted with thirty-two pieces of ordnance, having ammunition, &c. proportionable, ſhall for the firſt three voyages which the ſaid ſhip ſhall make to any foreign parts, receive a tenth of the cuſtoms called the ſubſidy of tonnage and poundage, payable for merchandize exported and imported in ſuch ſhips; but if after the end of the three firſt voyages, ſhips ſo built, ſhall be altered ſo as to become leſs defenſible than they were at firſt, then they ſhall be forfeited and loſt.

By 2 Ann. c. 9. owners of ſhips might navigate during the war with France, with maſters, and only one half of the mariners Engliſh: and by 3 and 4 Ann. c. 13. any ſhips might be navigated by foreign ſeamen; and foreigners ſerving on board any Engliſh ſhip for two years, were to be deemed natural-born ſubjects, &c.

By 4 Geo. I. c. 12. and 11. Geo. I. c. 29. if any officer or mariner belonging to any ſhip or veſſel, ſhall willfully caſt away, burn, or deſtroy the ſhip to which he belongeth, or in any-wiſe direct to procure the ſame to be done, with intent to prejudice a perſon that ſhall have granted any inſurance thereon, &c. he ſhall on conviction be adjudged guilty of felony without benefit of clergy.

By 6 Geo. II. c. 29. maſters of ſhips lying in the river Thames, who have occaſion for ballaſt, ſhall pay 1 s. per ton, colliers, other ſhips 1 s. 3 d. and foreign ſhips 1 s. 7 d. per ton, to the corporation of the Trinity-houſe at Deptford; who ſhall pay ballaſt-men 9 d. a ton, for raiſing and carrying it, &c. and it ſhall be lawful for any maſter of a ſhip to appoint two perſons to go on board any lighter bringing ballaſt to ſuch ſhip, to inſpect the marks thereof; and every ballaſt-man ſhall immediately before the delivery of ballaſt to any ſhip, trim ſuch lighter, ſo as to make it ſwim at equal marks at the ſtem and ſtern, and pump all the water out, &c. and the maſter, wardens, and aſſiſtants of the Trinity-houſe, are to make good to the maſter, the quantity or value of the ballaſt which ſhall be found deficient, or forfeit 50 l. one moiety to the poor, and the other to the perſon ſuing for it. The 7th of Geo. II. c. 15. ordains, that no owners of ſhips ſhall be liable to any loſs by reaſon of embezzlement by the maſter or mariners, of any goods or merchandize ſhipped on board, or for any act done by them, without the privity or knowledge of ſuch owners, further than the value of the ſhip, and amount of the freight during the voyage, in which ſuch embezzlement of the maſter or mariners ſhall be committed; and if ſeveral perſons ſhall ſuffer damage by the means aforeſaid, and the value of the ſhip and cargo ſhould be ſufficient to make compenſation; then the freighters ſhall receive ſatisfaction in average, in proportion to their reſpective loſſes, to be aſcertained on a bill in equity, exhibited for a diſcovery thereof, and of the value of ſuch ſhip and freight. But nothing in this act ſhall diſcharge any remedy, which any perſon may have againſt the maſter and mariners, in reſpect of an embezzlement. See *Freight*, *Inſurance*, &c.

MARINES, or MARINE Forces, a body of ſoldiers raiſed for the ſea-ſervice, and trained to fight either in a naval engagement, or in an action aſhore. The great ſervice of this uſeful corps was manifeſted frequently in the courſe of the late war, particularly at the ſiege of Belleiſle, where they acquired a great character, although lately raiſed, and hardly exerciſed in military diſcipline. At ſea they are incorporated with the ſhip's crew, of which they make a part, and many of them learn in a ſhort time to be excellent ſeamen, to which their officers are ordered by the admiralty to encourage them, although no ſea-officer is to order them to go aloft againſt their inclinations. In a ſea-fight their ſmall arms are of great advantage in ſcouring the decks of the enemy; and when they have been long enough at ſea to ſtand firm when the ſhip rocks, they muſt be infinitely preferable to ſeamen if the enemy attempts to board, by raiſing a battalion with their fixed bayonets to oppoſe him. See *Boarding*.

* MARR, a county of Scotland, bounded on the north by Buchan and Banff; on the eaſt by the German Ocean; on the ſouth by Mers and Gowry; and on the weſt by Badenoch and Athol. The chief town is Aberdeen.

* MARS, in pagan worſhip, the God of war. According to ſome, he was the ſon of Jupiter and Juno, others ſay he was the ſon of Juno alone, who being angry at Jupiter's having produced Minerva from his brain, in revenge conceived by touching a flower and became the mother of this formidable deity. The amours of Mars and Venus, and the manner in which Vulcan detected them, and expoſed them to the laughter of the other Gods, have been deſcribed by many of the ancient poets. He is ſaid to have had many wives and miſtreſſes and a conſiderable number of children. Mars was held in great veneration by the Romans, from his being the father of Romulus, their founder, and alſo from their inclination to conqueſt. He had magnificent temples erected to him at Rome. Mars is repreſented in a chariot, drawn by furious horſes. He is completely armed, and extends his ſpear with one hand, and graſps a ſword, imbrued in blood, with the other. He has a fierce and ſavage aſpect, Diſcord is repreſented preceding his car, and Clamour, Fear, and Terror, appear in his train. The victims ſacrificed to him were the wolf, the horſe, the wood-pecker, the vulture, and the cock. This god is evidently of Egyptian original, for in the ſacrifices which immediately preceded their military expeditions, their Iſis, who appeared in a warlike-dreſs, and gave riſe to the Greek Pallas, or Minerva, was accompanied by another figure, equipped like Mars, with an helmet and buckler.

MARSHAL, in its primary ſignification, an officer who has the command or care of horſes; but it is now applied to officers who have very different employments; as earl-marſhal, knight-marſhal, or marſhal of the king's horſe, &c.

MARSHAL, or MARESCHAL, *of France*, an officer of the greateſt dignity in the French armies.

MARSHALLING a coat in heraldry, the diſpoſal of ſeveral coats of arms belonging to diſtinct families, in the ſame eſcutcheon or ſhield, together with their ornaments, parts, and appurtenances.

MARSHMALLOW, *Althæa*, in botany and medicine. See *Althæa*.

MARSHY-LANDS, thoſe liable to be overflowed by the ſea. &c. for the draining of which, ſee the articles *Ditch*, *Drain*, &c.

MARTIAL LAW, the law of war, which entirely depends on the arbitrary power of the prince, or of thoſe to whom he has delegated it: for though the king can make no laws in time of peace without the conſent of parliament, yet in time of war he uſes an abſolute power over the army.

MARTIN, *Martes*, in zoology, a ſpecies of muſtela, of a blackiſh brown colour, and with a pale throat: it is about the ſize of a common cat, but more ſlender.

MARTIN is alſo the name of a bird of the hirundo kind, of a black colour, and with the throat white.

MARTINGALE, in the menage, a thong of leather faſtened to one end of the girths under the belly of a horſe, and at the other end to the muſs-roll, to keep him from rearing.

MARTLETS, in heraldry, are little birds repreſented without feet, and uſed as a difference or mark of diſtinction for younger brothers, to put them in mind that they are to truſt to the wings of virtue and merit, in order to raiſe themſelves, and not to their feet, they having little land to ſet their feet on.

MARTYR, one who lays down his life for the goſpel, or ſuffers death for the ſake of his religion. The feſtivals of the martyrs are of very antient date in the Chriſtian church, and may be carried back at leaſt to the time of Polycarp, who ſuffered martyrdom about the year of Chriſt 168. On theſe days the Chriſtians met at the graves of the martyrs, and offered prayers and thankſgivings to God for the examples they had afforded them; they celebrated the euchariſt, and gave alms to the poor; which, together with a panegyrical oration or ſermon, and reading the acts of the martyrs, were the ſpiritual exerciſes of theſe anniverſaries.

MARTYROLOGY, in the church of Rome, a catalogue or liſt of martyrs, including the hiſtory of their lives and ſufferings for the ſake of religion.

MARUM SYRIACUM, Syrian herb-maſtich, in botany, a low ſhrubby plant, which is ſaid to be a native of Syria, and of one of the Hieres iſlands, on the coaſt of Providence: in our climate it does not well bear ſevere winters without ſhelter. The leaves of marum have a bitteriſh, aromatic, very pungent taſte: and when rubbed a little, yield a quick, piercing ſmell, which provokes ſneezing. They have been chiefly made uſe of as an ingredient in ſternutatory powders, though, from their ſenſible qualities, they promiſe to be applicable to more important purpoſes, and to have no ill title to the ſtimulating, attenuating, deobſtruent, antiſeptic virtues aſcribed to them by Wedelius in a diſſertation on this plant: they ſeem particularly well adapted as an ingredient in the volatile oily aromatic ſpirits, with which their agreeable pungency in a great degree coincides. The marum loſes but little of its pungency on being dried, and in this reſpect it differs remarkably from many other acrid herbs, as thoſe called antiſcorbutic.

* MARSEILLES, a large city and ſea-port town of Provence. It is one of the moſt conſiderable in France, being populous and carrying on a great trade. Its harbour is of an oval form, and has a quay fourteen hundred paces long, on which are the fineſt houſes of the city, and it yields a moſt agreeable walk. In the day time one part of it is taken up by the ſhops of the galley-ſlaves, in which are all ſorts of toys and drugs. The mouth of the harbour is barred with a chain, which is ſupported by three ſtone piers. The cathedral church of Notre Dame was formerly a heathen temple. In the collegiate church of St. Martin is the image of the Virgin Mary in ſilver, five feet and a half high, and the crown and ornaments immenſely rich. The church of St. Saviour, now a nunnery, was conſecrated to Apollo. There are here ſeveral religious houſes of both ſexes. There is likewiſe a dock for building ſhips, and an arſenal, which terminates the walls of the city. The town-houſe is ſeated on the harbour, and under it is a room where the merchants meet, that above being reſerved for the governors and magiſtrates. Marſeilles is fortified by ſtrong walls, and the tetragon is the principal of the two citadels which command it. This city is ſurrounded with large fields, in which are ſix thouſand ſummer-houſes of the citizens, with gardens and vineyards. At this place may be had coral, ſilks, and the beſt drugs, from all parts of the world. In 1720, a ſhip from Sayd brought the plague, which made a terrible havock among the inhabitants. Marſeilles is ſeated near the Mediterranean Sea, fourteen miles ſouth of Aix, and four hundred and twenty-two ſouth by eaſt of Paris. Long. 5. 27. E. Lat. 43. 18. N.

* MARTINICO, a large iſland of North-America, and one of the Caribbees. It is about forty miles in length, and one hundred in circumference. The French poſſeſſed it from 1635 'till the 13th of February, 1762, when it was taken by the Engliſh; but was reſtored to the French by the peace of 1763. There are many high mountains covered with trees, as well as ſeveral rivers and fertile valleys, but they will not bear either wheat or vines. It produces ſugar, cotton, ginger, indigo, chocolate, aloes, pimento, plantains, and other tropical fruits It is extremely populous, and the governor-

governor-general of the French Caribbee Iſlands reſides here. It has ſeveral ſafe and commodious harbours, which are all well fortified. The principal places are Fort Royal, Fort St. Peter, Fort Trinity, Fort Marigot, and Fort Dumouillage. There are ſtill ſome of the ancient inhabitants remaining. Long 62. 30. W. Lat. from 14. 0. to 15 0.

* MARY STUART, queen of France and Scotland, was the daughter of James V. of Scotland, and Mary de Guiſe, the daughter of Claude I. of Lorrain, duke of Guiſe. She ſucceeded her father when eight years of age, and was carried into France during the civil wars which broke out in Scotland, where ſhe was educated at the court of Henry II. and on the 24th of April, 1558, married the dauphin, on which they both aſſumed the title of king and queen of Scotland, England, and Ireland, and quartered their arms accordingly. Queen Elizabeth cauſed her ambaſſador in France to complain of this uſurpation, but without effect: and therefore conſidered Mary as a dangerous rival. The dauphin was crowned king of France on the death of his father, by the name of Francis II. but died ſoon after; on which Mary quitted the title of queen of England, and returned into Scotland, where ſhe married her couſin Henry Stuart, lord Darnley, and cauſed him to be ſtyled king of Scotland. She at firſt ſhewed great fondneſs for him, but afterwards rendered him jealous by her familiarity with her favourite Rizzio, an Italian fidler. On which the earl of Morton, and ſome others, wounded Rizzio in the queen's preſence, when ſhe was advanced about five months in her pregnancy, and then drawing Rizzio into another room, they completed the murder. The earl of Bothwell ſoon after became her favourite, and while he appeared with a royal magnificence, and was loaded with favours, ſhe treated her huſband with indifference, and the greateſt indignities. The king was ſoon after murdered, as it is ſaid, by the earl of Bothwell, who a few months after married the queen, having firſt divorced his wife, and afterwards treated the queen with great brutality. The diſturbances in Scotland now obliged queen Mary to ſeek for protection in England, while her young ſon James was crowned king of Scotland. Mary, however, was impriſoned by order of Elizabeth, and after being confined eighteen years, was beheaded for a conſpiracy, on the 18th of February, 1587, in the forty-third year of her age. Queen Elizabeth has been greatly blamed for this act of ſeverity. This unhappy princeſs was extremely beautiful and accompliſhed.

* MARY, queen of England, daughter of king Henry VIII. and Catharine of Arragon, was born the 18th of February, 1515. On her father's marrying Anne Boleyne, ſhe was declared illegitimate. After the death of Edward VI. in 1553, lady Jane Grey was proclaimed queen of England, but Mary promiſing that no change ſhould be made in religion, obtained the crown, and ſome time after, lady Jane, with the lord Dudley, and other perſons of quality, were beheaded. Soon after Mary's acceſſion to the throne, ſhe married Philip II. afterwards king of Spain, ſon of the emperor Charles V. who was then living, and in violation of the moſt ſacred promiſes, began a dreadful perſecution of the Proteſtants, which was carried on by Bonner, biſhop of London, and Gardiner, biſhop of Winchester. Great numbers of perſons ſuffered martyrdom at the ſtake; among which were Cranmer, Ridley, Latimer, Hooper, and Ferrer; and all the priſons in the kingdom were crowded with thoſe pious ſufferers, who ſubmitted to perſecution rather than violate their conſciences. Even the princeſs Elizabeth was cloſely watched, and obliged to conceal her religious ſentiments. Amidſt theſe dreadful proceedings, Mary was far from being happy; a continual diſagreement with her huſband, who was younger than ſhe, and of whom ſhe was paſſionately fond, with the loſs of Calais, which was taken by the French, threw her into a complication of diſtempers, of which ſhe died without iſſue, the 17th of November, 1558, in the forty-fourth year of her age, after a bloody reign of five years, four months, and eleven days, and was ſucceeded by Elizabeth.

* MARY II. queen of England, was the eldeſt daughter of James II. king of England, by his firſt wife the lady Anne Hyde, and was born at St. James's the 10th of May, 1662. On the 15th of November, 1677, ſhe married William-Henry of Naſſau; went into Holland with her huſband, who was made ſtadtholder of the United Provinces, and ſtaid there till 1689, when, after the abdication of king James, ſhe returned to England, and on the 11th of April was crowned queen, and her huſband king of England, by the name of William III. She endeared herſelf to the people by the

wiſdom of her conduct, and during the abſence of king William, had the adminiſtration of affairs, which ſhe managed with great glory. She protected the arts and ſciences, and died of the ſmall-pox at Kenſington palace, the 28th of December, 1694.

MARYGOLD, or Marsh-Marygold, a plant called by the botaniſts caltha.

French Marygold, in botany, tagetes.

* MARYLAND, an Engliſh ſettlement in North-America, at the north end of Cheſſepeak-bay, which divides it into two parts, called the eaſtern and weſtern ſhores. It is bounded on the north by Penſylvania; on the eaſt by another part of Penſylvania and the ſea; on the ſouth by Virginia; and on the weſt by the Aligany mountains. It is one hundred and forty miles in length, and nearly the ſame in breadth. At firſt, when it was ſettled, it was almoſt covered with trees, except in ſome few ſpots, which were old plantations of the original inhabitants. It reſembles Virginia in all things, and the planters live in houſes diſperſed about the country, and generally near the rivers, for the conveniency of putting their hogſheads of tobacco readily on board the ſhips. The governor and proprietor of this country was the late lord Baltimore, and the council was appointed by him; but the houſe of repreſentatives is choſen by the freeholders.

MASCULINE, or Masculine-Gender, among grammarians, that belonging to the male. See *Gender*.

MASON, a perſon employed under the direction of an architect, in the raiſing of a ſtone building.

MASONRY, in general, a branch of architecture, conſiſting in the art of hewing or ſquaring ſtones, and cutting them level or perpendicular, for the uſes of building; but in a more limited ſenſe, maſonry is the art of aſſembling and joining ſtones together with mortar.

All the kinds of maſonry now in uſe may be reduced to theſe five; viz. bound maſonry; that of brick-work, where the bodies and projectures of the ſtones incloſe ſquare ſpaces, or pannels, &c. ſet with bricks; that de moilon, or ſmall work, where the courſes are equal, well ſquared, and their edges or beds ruſticated; that where the courſes are unequal; and that filled up in the middle with little ſtones and mortar.

MASQUE, or Mask, a cover for the face, with ſuitable apertures for the eyes and mouth.

MASQUES, in architecture, certain groteſque faces, uſed to fill vacant places, as friezes, pannels of doors, keys of arches, &c.

MASQUERADE, an aſſembly of perſons maſked and dreſſed in peculiar habits, meeting to dance and divert themſelves, and oftentimes for worſe purpoſes. Maſquerades are now in diſrepute, on account of their not being countenanced by his preſent majeſty.

MASS, *Miſſa*, in the church of Rome, the office or prayers uſed in the celebration of the euchariſt; or, in other words, conſecrating the bread and wine into the body and blood of Chriſt, and offering them ſo tranſubſtantiated, as an expiatory ſacrifice for the quick and the dead. As the maſs is in general believed to be a repreſentation of the paſſion of our bleſſed Saviour, ſo every action of the prieſt, and every particular part of the ſervice, is ſuppoſed to allude to the particular circumſtances of his paſſion and death.

* MASSINGER (Philip) an old Engliſh dramatic poet, was born at Saliſbury about the year 1585, and was educated at Oxford. On his leaving the univerſity, he went to London, where he wrote many plays, which were greatly admired for the œconomy of the plots, and the purity of the ſtyle. He was as remarkable for his modeſty as his abilities, and died ſuddenly at his houſe on the Bankſide in Southwark, near the play-houſe, and was interred in St. Saviour's church-yard, in the ſame grave with Mr. Fletcher the poet.

MASSIVE, among builders, an epithet given to whatever is too heavy and ſolid: thus a maſſive column is one too ſhort and thick for the order whoſe capital it bears; and a maſſive wall is one whoſe openings or lights are too ſmall in proportion.

MAST, in ſhip-building, a large ſtrong poſt, or pole of timber, ſtanding erect in a ſhip to carry ſail, whereby ſhe is enabled to make her progreſs through the ſea. Among the ancient Grecians every ſhip had ſeveral maſts: we are nevertheleſs informed by Ariſtotle, that at firſt there was only one maſt, which was fixed in the middle of the ſhip. With regard to the moderns, the maſts of their ſhips generally conſiſt of three pieces, joined together lengthwiſe, viz. the lower-maſt, the top-maſt, and the top-gallant-maſt.

The top-maſt ſtands at the head of the lower-maſt, and the top-gallant-maſt at the head of the top-maſt, in the ſame manner, and either of the two latter can be occaſionally taken down; but the lower-maſt, as it is ſettled on the keel of the ſhip, can only be removed by hoiſting it out, or cutting it away.

As every maſt is compoſed of three pieces, ſo all ſhips, properly ſo called, are furniſhed with three maſts, viz. the main-maſt, the fore-maſt, and mizen-maſt. Thoſe which have only two or one maſt, are not called ſhips by ſea-men, but vary their names according to their method of rigging. Of two maſts there are ſnows, brigs, bilanders, ketches, buſſes, ſchooners, and hermaphrodites, among the Engliſh. Among the Spaniards and Italians, ſettees, barco-longas, feluccas, &c. Thoſe of one maſt are ſloops, tartans, bean-cods, ſhallops, &c.

In the Britiſh navy, maſts are proportioned to the extreme breadth of the ſhip from out to out.

The proportion for maſting ſhips in the merchants ſervice is generally regulated by the judgment and experience of the commander.

MASTER, *Magiſter*, a title of authority, as the grand maſter of Malta, the maſter of St. Lazarus, &c.

Master *of a ſhip of war*, an officer, who has the charge of navigating her from port to port, under the direction of the captain; the management and diſpoſition of the ſails, the conducting the ſhip in all extremities of danger and directing her motions in the time of action, more particularly belongs to him, as alſo to ſuperintend the proviſions, and ſee that none are permitted to come aboard but ſuch as are wholeſome and ſweet: he is alſo to take care that they are ſafely ſtowed by his mates and quarter-maſters: theſe are alſo employed to ſuperintend the navigation when he is off the deck, and to aſſiſt wherever his duty is concerned.

Master *of a merchant ſhip*, the officer who commands and directs the ſhip's courſe, manages her lading, and all other affairs.

Master *at arms*, in the marine, an officer whoſe buſineſs it is to confine and plant centries over the priſoners in a ſhip of war; to obſerve that all the lights and fires are put out when the evening gun fires, except ſuch as are allowed by proper authority, or which are under the inſpection of centries: he is alſo to attend the ſide when any boats come aboard, and ſearch carefully that no ſpirituous liquors are brought into the ſhip, but what are permitted by the commanding officer. He is likewiſe to teach the ſeamen the exerciſe of the ſmall-arms; for this purpoſe, in large ſhips, the maſter at arms has ſeveral corporals under him to aſſiſt in his office, and relieve the centries and each other.

Master *attendant*, in the king's dock-yards, an officer whoſe duty it is to obſerve that all the ſhips, which are laid up, or ſaid to be in ordinary, are properly moored, cleaned, and kept in order; he alſo attends the muſters in the dock-yard, to obſerve that all the men regiſtered on the books do their duty: he has likewiſe the charge of the moorings, which are fixed in the river or harbour where he reſides, which he is always to keep in good repair, that they may be ready to moor the ſhips of war when neceſſary, which employment he muſt alſo ſee ſecurely performed: he removes the ſhips from one place to another in the harbour, and pilots them into and out of the docks, &c.

Master *of arts* is the firſt degree taken up in foreign univerſities, and for the moſt part in thoſe of Scotland; but the ſecond in Oxford and Cambridge; candidates not being admitted to it till they have ſtudied ſeven years in the univerſity.

Masters *in chancery*, of which there are twelve, the maſter of the rolls being chief, are uſually choſen out of the barriſters of the common law, and ſit in chancery, or at the rolls, as aſſiſtants to the lord chancellor and maſter of the rolls. The lord chancellor alſo appoints ſeveral maſters extraordinary in chancery, in different parts of the country, for the convenience of adminiſtering affidavits, &c. in cauſes depending in that court.

Master *of the horſe*, a great officer of the crown, who orders all matters relating to the king's ſtable, races, breed of horſes; and commands the equerries and all the other officers and tradeſmen employed in the king's ſtables. His coaches, horſes, and attendants, are the king's, and bear the king's arms and livery.

Master *of the ordnance*, a great officer who has the chief command of the king's ordnance and artillery

Master *of the revels*, an officer who orders all things relating to the performance of plays, maſks, balls, &c. at court.

MASTER *of the rolls*, a patent officer for life, who has the cuſtody of the rolls of parliament and patents which paſs the great ſeal, and of the records of chancery, as alſo commiſſions, deeds, recognizances; which, being made of rolls of parchment, gave riſe to the name. He alſo hears and determines ſuits in the court of chancery, as well as the lord chancellor; and his decrees, like thoſe of the lord chancellor, cannot be appealed from but to the houſe of lords.

MASTERWORT, in botany. See the article IMPERATORIA.

MASTICH, in the materia medica, a concrete reſin, obtained in the iſland Chio from the Lentiſk tree, brought over in ſmall yellowiſh tranſparent grains or tears. From tranſverſe inciſions made in the bark of the tree, about the beginning of Auguſt, the reſin exudes in drops, which running down, and concreting on the ground, are thence ſwept up. The tree is raiſed alſo in ſeveral parts of Europe; but no reſin has been obſerved to iſſue from it in theſe climates; nor do all the trees of this ſpecies in the iſland Chio itſelf, afford this commodity. See the article LENTISCUS.

This reſin has a light agreeable ſmell, eſpecially when rubbed or heated: in chewing, it firſt crumbles, ſoon after ſticks together, and becomes ſoft and white, like wax, without impreſſing any conſiderable taſte.

Maſtich is recommended, in doſes of from half a ſcruple to half a dram, as a mild corroborant and aſtringent, in old coughs, hemoptyſes, diarrhœas, weakneſs of the ſtomach, &c. It is given either in ſubſtance, divided by other materials; or diſſolved in ſpirit, and mixed with ſyrups; or diſſolved in water into an emulſion by the intervention of gum-arabic or almonds: the decoctions of it in water, which ſome have directed, have little or nothing of the virtue of the maſtich. It is ſaid that this reſin is commonly employed as a maſticatory in Chio, and among the Turkiſh women, for ſweetening the breath, and ſtrengthening the gums and teeth; and that when thus uſed, by procuring a copious excretion of ſaliva, it proves ſerviceable in catarrhous diſorders.

MASTICATION, *Maſticatio*, in medicine, the action of chewing, or of agitating the ſolid part of our food between the teeth, by means of the motion of the jaws, the tongue, and the lip, whereby it is broken into ſmall pieces, impregnated with ſaliva, and ſo fitted for deglutition, and a more eaſy digeſtion.

MASTICATORIES, in medicine, ſuch remedies as are taken in at the mouth; and chewed in order to promote the evacuation of the ſalival humour, as tobacco, ginger, pepper, ſage, roſemary, thyme, maſtich, &c.

MAT, among ſailors, a ſort of web or texture, formed of a variety of foxes, each of which conſiſts of a certain number of rope-yarns twiſted together.

MATCH, a kind of rope ſlightly twiſted, and prepared to retain fire for the uſes of the artillery, mines, fire-works, &c.

MATCHING, in the wine-trade, the preparing veſſels to preſerve wines and other liquors, without their growing ſour or vapid. The method of doing it, as directed by Dr Shaw, is as follows: melt brimſtone in an iron ladle, and when thoroughly melted, dip into it ſlips of coarſe linnen-cloth; take theſe out, and let them cool: this the wine-coopers call a match; take one of theſe matches, ſet one end of it on fire, and put it into the bung-hole of a caſk; ſtop it looſely, and thus ſuffer the match to burn nearly out: then drive in the bung tight, and ſet the caſk aſide for an hour or two. At the end of this time examine the caſk, and you will find that the ſulphur has communicated a violent pungent and ſuffocating ſcent to the caſk, with a conſiderable degree of acidity, which is the gas and acid ſpirit of the ſulphur. The caſk may after this be filled with a ſmall wine, which has ſcarce done its fermentation, and bunging it down tight, it will be kept good and will ſoon clarify: this is a common and very uſeful method, for many poor wines could ſcarce be kept potable even a few months without it.

MATE *of a Ship of War*, an officer under the maſter, whoſe duty it is to obſerve the navigation of the ſhip, and to keep the log ſtrictly marked; to trim the ſails in the fore-part of the ſhip, and to ſuperintend all affairs relating to the cables, moorings, and riding of the ſhip; to command the boats in which proviſions and water are brought to the ſhip, and aſſiſt in ſtowing them after they arrive abroad.

MATE *of a Merchant-ſhip*, the officer who commands the ſhip in abſence of the commander, and ſhares the duty with him. The number of mates both in ſhips of war and merchant-men, is in proportion

tion to the ſize of a ſhip: a firſt rate man of war has ſix mates, and an Eaſt-India man the ſame number.

MATERIA MEDICA comprehends all the ſubſtances either uſed in medicine in their natural ſtate, or which afford preparations that are ſo; theſe belong partly to the animal, partly to the vegetable, and partly to the foſſile kingdom.

MATHEMATICS, that ſcience which conſiders magnitudes either as they are computable or meaſurable: that part which relates to number only, is called arithmetic; and that which relates to meaſure in general, whether length, breadth, depth, motion, force, &c. is called geometry. The word is Greek, μαθηματικη ſignifying the ſame thing, which is derived from μαθητης, a diſciple, and that from μανθανω, to teach. The firſt who cultivated mathematics after the flood were the Aſſyrians and Chaldeans, from whom, ſays Joſephus, they were carried by Abraham to the Egyptians, and among theſe Ariſtotle fixes the firſt riſe of mathematics. From Egypt, 584 years before Chriſt, they paſſed into Greece through the hands of Thales; after him came Pythagoras, who paid a particular regard to arithmetic, fetching the greateſt part of his philoſophy from numbers; he firſt, according to Laertius, abſtracted geometry from matter; and to him we owe the doctrine of incommenſurable magnitude, the five regular bodies, beſides the principles of muſic and aſtronomy. To him ſucceeded Anaxagoras, Oenopides, Briſo, Antipho, and Hippocrates of Scio, who all applied to the quadrature of the circle, duplicature of the cube, &c. but the laſt with moſt ſucceſs, and Proclus mentions him as the firſt compiler of the mathematical elements. Democritus excelled in mathematics as well as phyſics. The next is Plato, who not only improved geometry, but introduced it into phyſics. Out of his ſchool proceeded a croud of mathematicians, among whom was Leodamus, who improved the analyſis firſt invented by Plato; Theætetus, who wrote on elements, and Archytas, who firſt applied mathematics to uſe in life. Theſe were ſucceeded by Neocles and Theon. Eudoxus excelled in arithmetic and geometry, and was the firſt founder of a ſyſtem of aſtronomy. Menechonus improved the elements. Ariſtotle's works are ſtored with mathematics; out of whoſe ſchool came Eudemus and Theophraſtus; the firſt wrote of numbers, geometry, and inviſible lines; the latter a mathematical hiſtory. To Ariſteus, Iſidorus, and Hypſicles, we owe the books of ſolids, which, with the other books of elements, were improved and methodiſed by Euclid, who died 284 years before Chriſt. An hundred years after Euclid, came Eratoſthenes and Archimedes; cotemporary with the latter was Conon. Soon after came Apollonius Pergæus, whoſe conics are ſtill extant. Hipparchus and Menelaus wrote on the ſubtenſes in a circle, the latter on ſpherical triangles. Theodoſius's three books of ſpherics are ſtill extant. In the year 70, Ptolemy of Alexandria was born; he was ſucceeded by Plutarch the philoſopher; after him came Eutocius, who commented on Archimedes, and occaſionally mentions ſeveral inventions on the duplicature of the cube. To Cteſebes of Alexandria we owe our pumps, and Geminus came ſoon after, whom Proclus prefers to Euclid himſelf. Diophantus of Alexandria was a great maſter of numbers and firſt inventor of algebra. Nichomachus is celebrated for his arithmetical, geometrical, and muſical works; Serenus for his books on the ſection of the cylinder; Proclus, for his comments on Euclid; and Theon is, by ſome, thought to be the author of Euclid's Elements. Pappus of Alexandria flouriſhed in the year 400, and his books of Mathematical Collections are ſtill extant. The writers on the Mathematics have been very numerous ſince that time, and the improvements therein very great.

MATRICULA, a regiſter kept of the admiſſion of officers and perſons entered into any body or ſociety, of which a liſt is made.

MATRIX, *Uterus*, the womb, in anatomy, that part of the female of any kind where the fœtus is conceived and nouriſhed till the time of its delivery.

MATRIX, a place proper for the generation of vegetables, minerals, and metals.

MATRIX, in letter foundery. See *Foundery*.

MATRONALIA, a feſtival of the antient Roman matrons, from whom it had its name. It was celebrated on the kalends of March in honour of the god Mars: and was to the Roman ladies what the feſtival of the Saturnalia was to their huſbands; for at this time they ſerved their women ſlaves at table, and received preſents from their huſbands.

MATROSSES, ſoldiers in the train of

artillery, who are next to the gunners, and aſſiſt them in loading, firing, and ſpunging the great guns. They carry fire-locks, and march with the ſtore-waggons, both as a guard, and to give their aſſiſtance in caſe a waggon ſhould break down.

MATTER, *Materia*, in phyſiology, whatever is extended and capable of making reſiſtance: hence, becauſe all bodies, whether ſolid or fluid, are extended, and do reſiſt, we conclude that they are material, or made up of matter. The Carteſians, it is true, make matter to conſiſt in extenſion alone; but extenſion, without reſiſtance, is nothing but mere ſpace. That matter is one and the ſame thing in all bodies, and that all the variety we obſerve ariſes from the various forms and ſhapes it puts on, ſeems very probable, and may be concluded from a general obſervation of the procedure of nature in the general formation and deſtruction of bodies. Thus, for inſtance, water, rarefied by heat, becomes vapour; great collections of vapours form clouds; theſe condenſed deſcend in the form of hail or rain; part of this collected on the earth conſtitutes rivers; another part mixing with the earth enters into the roots of plants, and ſupplies matter to, and expands itſelf into various ſpecies of vegetables. In each vegetable it appears in one ſhape in the root, another in the ſtalk, another in the flowers, another in the ſeeds, &c. From hence various bodies proceed; from the oak, houſes, ſhips &c. from hemp and flax we have thread; from thence our various kinds of linen; from thence garments; theſe degenerate into rags, which receive from the mill the various forms of paper; hence our books; which by fire are converted partly into water, partly into oil, another part into air, a fourth part into ſalt, and a fifth into earth; which are called the elements of bodies, and which, mixed with common earth, are again reſuſcitated in various forms of bodies.

MATTHEW, *or Goſpel of St.* MATTHEW, a canonical book of the New Teſtament. St. Matthew wrote his Goſpel in Judea, at the requeſt of thoſe whom he had converted, and it is thought he began it in the year 41, eight years after Chriſt's reſurrection. It was written, according to the teſtimony of all the ancients, in the Hebrew or Syriac language, which was then common in Judea; but the Greek verſion of it, which now paſſes for the original, is as old as the apoſtolical times. St. Matthew's view in writing his Goſpel, was chiefly to ſhew the royal deſcent of Jeſus Chriſt, and to repreſent his life and converſation among men. No one of the Apoſtles enters ſo far into the particulars of the actions of Jeſus Chriſt, or has given ſo many rules for the conduct of life. If we compare him with the other three evangeliſts, we may obſerve a remarkable difference in the order and ſucceſſion of our Saviour's actions, from chap iv. to chap. xiv. 13. Some have imputed this variation of St. Matthew to mere chance; and others to choice and deſign; however, it can be no prejudice to the truth of the facts, which are the eſſential part of the goſpel; and as to the order of time, the ſacred authors were not always ſolicitous about it.

* MATTHEW (ST.) an apoſtle and evangeliſt, was the ſon of Alpheus, and was a Galilean as were the other apoſtles. He was a publican, that is, a receiver of the taxes, at Capernaum, and had his office near the ſea of Galilee. Jeſus paſſing that way, bid him follow him, on which he inſtantly obeyed. He for ſome time preached in Judea, and reſolving to go into other countries, wrote the Goſpel which bears his name about the year 36.

MATURATION, in ſurgery, the ſame with ſuppuration.

* MATUTA, in pagan worſhip, a goddeſs, ſaid to have been the ſame with Ino, the wife of Athamas, king of Thebes, and the nurſe of Bacchus; who was changed into a ſea goddeſs, and called by the Greeks Leucothea. King Servius Tullius built a temple to her at Rome, and her feaſt was called Matrales.

MAUNCH, in heraldry, the figure of an antient coat ſleeve, borne in many gentlemen's eſcutcheons.

MAUNDAY-THURSDAY, the Thurſday in Paſſion-week, which was called Maunday, or Mandate-Thurſday, from the command which our Saviour gave his Apoſtles to commemorate him in the Lord's Supper, which he this day inſtituted; or from the new commandment which he gave them to love one another, after he had waſhed their feet as a token of his love to them. Our Saviour's humility in waſhing his diſciples feet, is commemorated on this day by moſt Chriſtian kings, who waſh the feet of a certain number of poor people, not indeed with their own royal hands, but by the hands of their lord almoner, or ſome other deputy.

MAUSOLEUM, a magnificent tomb, or funeral monument. The word is derived from Mauſolus, king of Caria, to whom Artemiſia, his widow, erected a moſt ſtately monument, eſteemed one of the wonders of the world, and called it, from his name, Mauſoleum.

MAXILLA, the jaws, or thoſe parts of an animal in which the teeth are ſet. The jaws are ſhorter in the human frame than in that of any other animal, in proportion to the ſize of the body; and this is a circumſtance that adds greatly to the beauty of the face.

MAXIMUM, in mathematics, the greateſt quantity attainable in any given caſe, and ſo ſtands oppoſed to minimum.

Methodus de MAXIMIS *et* MINIMIS, in mathematics, a method ſo called, whereby the greateſt or leaſt poſſible quantity attainable in any caſe is arrived at.

Thus (plate XXIX. fig. 5.) if the ordinate B C, flowing according to the direction A F, continually increaſes till it arrives at a certain place D E, after which it begins to diminiſh, the ordinate D E, in this caſe, is called the greateſt ordinate, or a maximum.

On the contrary, if (fig. 6.) the ordinate B C, flowing according to the direction A F, continually decreaſes, till it come into the place D E, and after that it begins to increaſe, the ordinate D E, in this caſe, is called the leaſt ordinate, or a minimum.

And how to determine the greateſt or leaſt ſtate; that is, how to find the value of the correſpondent abſciſſe A D, from the equation expreſſing the nature of the curve, is the proper buſineſs of the method de maximis and minimis.

And, to this end, we muſt obſerve that the fluxion of the ordinate B C is to the fluxion of the abſciſſe A B, as the ordinate B C is to the ſubtangent V B. Let us now ſuppoſe the ordinate B C (fig. 5.) in a flowing ſtate moving according to the direction A F, it is manifeſt, that, the nearer the ordinate B C approaches the ordinate D E, the greater will be the ſubtangent B V, till when the ordinate B C arrives at, or is coincident with the ordinate D E, the tangent H E I to the point E, will be parallel to the axis A F; conſequently the ſubtangent B V will become infinite, in reſpect to the ordinate D E, and the fluxion of the ordinate itſelf will vaniſh, or become equal to nothing.

Whence to find the value of the correſpondent abſciſſe, in this caſe let the fluxionary value of the ordinate, deduced from the equation expreſſing the nature of the curve, be put equal to 0, or nothing; by which means all thoſe members of the equation in which it is found will vaniſh, and thoſe that remain will determine the place of the maximum.

MAY, *Maius*, the fifth month of the year, conſiſting of thirty-one days. See *Month* and *Year*.

MAYOR, the chief magiſtrate of a city or town choſen annually out of the aldermen.

MEAD, a liquor made of honey, held in great eſtimation by moſt of the northern nations, but perhaps not eſteemed here ſo much as it might deſerve, if due care was taken to prepare it properly.

MEADOW, in its general ſignification, paſture, or graſs-land, annually mown for hay; but is more particularly applied to lands that are ſo low as to be too moiſt for cattle to graze upon them in winter, without ſpoiling the ſward. Too much or too little water is almoſt equally prejudicial to meadows, but the beſt land for meadows is a rich ſoil, that has a moiſt bottom, eſpecially where a ſmall brook may be brought over it, and where there is ſuch a deſcent, that the water will not lodge: theſe are better than thoſe by great rivers, where the crops are often loſt. Thoſe that may be overflowed at pleaſure, are called water meadows; theſe ſhould never be overflowed till the end of March, except once or twice in winter, when there are ſuch floods as bring down great quantities of ſoil from the upper lands, and if the ſeaſon ſhould prove dry, it will be of great ſervice to the graſs, if the meadows are overflowed again; but then the cattle ſhould not be turned in till the ſward is dry enough to bear their weight. Miller recommends the weeding of meadows in April and October, with a ſpaddle, and rolling them with a heavy roller in ſpring and autumn. See *Paſture*.

MEAN, the middle between two extremes: thus we ſay, mean diſtance, mean proportion, &c.

MEASLES, in medicine, a cutaneous diſeaſe, atended with a fever, in which there is an appearance of eruptions that do not tend to a ſuppuration. The meaſles begin with chillneſs and ſhivering, and heat and cold ſucceed by turns. The next day the fever comes on, with great ſickneſs, thirſt, and loſs of appetite; the tongue is white, but not dry; there is a little cough, a heavineſs of the head and eyes,

eyes and a continual ſleepineſs; then follows a ſneezing, and ſwelling of the [illegible], and a ſerous humour often diſtils from the noſe and eyes, which are certain ſigns that the eruption is at hand. In the face, the ſpots are ſmall, but on the breaſt broad and red. The patient vomits, but oftener has a looſeneſs with greeniſh ſtools. Theſe ſymptoms continue and increaſe till the fourth, and ſometimes the fifth day, at which time the ſpots, which are like flea-bites, increaſe in number and magnitude, but riſe little above the ſkin. The ſymptoms do not immediately vaniſh after the eruption, as in the ſmall-pox, except the vomiting. The cough and fever increaſe, with difficulty of breathing. About the ſixth day, the ſkin of the face and forehead begins to grow rough, and the cuticle breaking, the puſtules die away; and on the eighth day the ſpots diſappear in the face, and are ſcarce viſible any where elſe; on the ninth they quite vaniſh, and fine, thin, light ſcales fall from the ſkin. The meaſles are in general not dangerous, unleſs from an inſalubrious epidemical conſtitution of the year, which ſometimes renders them malignant: which may be known by a ſudden loſs of ſtrength, coldneſs of the extreme parts, great reſtleſsneſs, and a delirium. Thoſe who die of the meaſles, are generally ſuffocated on the ninth day. Some have a looſeneſs which continues ſeveral weeks, and brings on a mortal tabes. Some have a ſlow fever, with an atrophy, and a ſwelling of the abdomen, which are fatal; and when a cough and hoarſeneſs remain after the diſeaſe, a conſumption will follow without ſpeedy aſſiſtance. If children are ſuſpected to abound with crudities in the inteſtines, it will be proper to evacuate with half a grain of tartar emetic, and ſyrup of ſuccory with rhubarb. When there are worms, anthelmintics ſhould be given. In adults abounding with blood, phlebotomy is neceſſary on the firſt days; and as ſoon as the eruption is ended, a gentle cathartic is proper: in a cough, nothing is better than oil of almonds freſh drawn, mixt with ſyrup of capillaire; half a ſpoonful of which ſhould be often given in water-gruel. The patient ſhould keep his bed for two days after the firſt eruption, and take abſorbent and diaphoretic powders, to which half a grain of ſaffron may be added; theſe ſhould be taken every night from the firſt onſet of the diſeaſe, till the patient recovers, increaſing or diminiſhing the doſe according to his age. If after the meaſles diſappear, they ſhould be followed by a difficulty of breathing, a fever, and other ſymptoms of an inflammation of the lungs, let blood be taken freely from the arm once, twice, or three times, as occaſion ſhall require, leaving a due ſpace between each bleeding, and give oil of ſweet almonds, and about twelve days from the invaſion let the patient be purged. The diet ought to be the ſame as in the ſmall-pox, taking particular care that the body be kept lax rather than bound up, through the courſe of the diſtemper. See *Pox*.

MEASURE, *Menſura*, in geometry, any quantity aſſumed as one, or unity, to which the ratio of other homogeneous or ſimilar quantities is expreſſed.

MEASURE *of an Angle*, an arch deſcribed from the vertex, in any place between its legs.

Hence angles are diſtinguiſhed by the ratio of the arches, deſcribed from the vertex, between the legs to the peripheries. Angles then are diſtinguiſhed by thoſe arches; and the arches are diſtinguiſhed by their ratio to the periphery: thus an angle is ſaid to be ſo many degrees as there are in the ſaid arch.

MEASURE *of a Figure*, or plane ſurface, is a ſquare whoſe ſide is one inch, foot, yard, or ſome other determinate length. Among geometricians, it is uſually a rod called a ſquare rod, divided into ten ſquare feet, and the ſquare feet into ten ſquare digits.

MEASURE *of a Line*, any right line taken at pleaſure, and conſidered as unity. The modern geometricians uſe a decempeda, or perch divided into ten equal parts, called feet; the feet they ſubdivide into ten digits, and the digit into ten lines, &c.

MEASURE *of the Maſs*, or *Quantity of Matter*, in mechanics, is its weight; it being apparent that all the matter which coheres and moves with a body, gravitates with it, and it being found by experiment that the gravities of homogeneal bodies are in proportion to their bulks; hence, while the maſs continues the ſame, the weight will be the ſame, whatever figure it put on: by which is meant its abſolute weight; for as to its ſpecific, that varies as the quantity of the ſurface varies. See *Gravity* and *Moment*.

MEASURE *of a Number*, in arithmetic, ſuch a number as divides another without leaving any fraction: thus, 8 is a meaſure of 24.

MEASURE *of a Solid*, a cube whoſe ſide is one inch, foot, yard, or any other determinate length. In geometry, it is a cubic perch divided into cubic feet, digits, &c. hence cubic meaſures, or meaſures of capacity. See *Sphere*, *Cube*, &c.

MEASURE *of Velocity*, in mechanics, the ſpace paſſed over by a moving body in a given time. To meaſure a velocity, therefore, the ſpace muſt be divided into as many equal parts as the time is conceived to be divided into; the quantity of ſpace anſwering to ſuch an article of time is the meaſure of the velocity. See *Velocity*.

MEASURE, in a legal and commercial ſenſe, denotes a certain quantity or proportion of any thing bought, ſold valued, or the like. Meaſures are then various, according to the various kinds and dimenſions of the things meaſured. Hence ariſe lineal or longitudinal meaſures, for lines or lengths; ſquare meaſures, for areas or ſuperficies; and ſolid or cubic meaſures, for bodies and their capacities. All which are different in different countries, and in different ages, and even many of them for different commodities. Whence ariſe other diviſions of ancient and modern meaſures, domeſtic and foreign ones, dry meaſures, liquid meaſures, &c.

Long MEASURES, or MEASURES *of Application*. The Engliſh ſtandard long meaſure for commerce, or that whereby the quantities of things are ordinarily eſtimated in the way of trade, is the yard, containing three Engliſh feet. Its diviſions are the foot, ſpan, palm, inch, and barley-corn; its multiples the pace, fathom, pole, furlong, and mile.

A Table of the MEASURES of Length of the principal Places in Europe, compared with the Engliſh Yard.

		Eng. yard
100	Aunes or ells of England equal to	125
100	of Holland or Amſterdam	75
100	of Brabant or Antwerp	76
100	of France	128¼
100	of Hamburgh, Francfort, &c.	62½
100	of Breſlau	60
100	of Dantzick	66¾
100	of Bergen and Drontheim	68¼
100	of Sweden and Stockholm	65¾
100	of St. Gall for linens	87½
100	of ditto, cloths	67
100	of Geneva	124¾
100	Canes of Marſeilles and Montpelier	214½
100	of Toulouſe and High Languedoc	200
100	of Genoa, of 9 palms	245¼
100	of Rome	227¼
100	Varas of Spain	93¾
100	of Portugal	123
100	Cavidos of Portugal	77
102	Braſſes of Venice	73½
100	of Bergamo, &c.	71¼
100	of Florence and Leghorn	64
100	of Milan	58½

N. B. The aunes or ells of Amſterdam, Haerlem, Leyden, the Hague, Rotterdam, and other cities of Holland, as are that of Nuremberg, being all equal are comprehended under that of Amſterdam; as thoſe of Oſnabrug are under thoſe of France; and thoſe of Bern and Baſil are equal to thoſe of Hamburg, Francfort, and Leipſic.

Square, or *Superficial* MEASURES. Engliſh ſquare or ſuperficial meaſures are raiſed from the yard of 36 inches multiplied into itſelf, and thus producing 1296 ſquare inches in the ſquare yard: the diviſions of this are ſquare feet and inches; and the multiples, poles, roods, and acres, as in the following table.

Engliſh Square-MEASURES.

Inches						
144	Feet					
1296	9	Yards				
3600	25	2 7/9	Paces			
39204	272¼	30¼	10.89	Poles		
1568160	10890	1210	435.6	40	Rood	
6272640	43560	4840	1743.6	160	4	Acre.

Grecian ſquare-meaſures were the plethron, or acre, by ſome ſaid to contain 1444, by others 10000 ſquare feet; and the aroura, the half of the plethron. The aroura of the Egyptians was the ſquare of 100 cubits.

Cubical MEASURES, or *Meaſures of Capacity for Liquids.*—The Engliſh meaſures were originally raiſed from troy-weight; it being enacted by ſeveral ſtatutes that eight pounds troy of wheat, gathered from the middle of the ear, and well dried, ſhould weigh a gallon of wine-meaſure, the diviſions and multiples whereof were to form the other meaſures; at the ſame time it was alſo ordered, that there ſhould be but one liquid meaſure in the kingdom: yet cuſtom has prevailed, and there having been introduced a new weight, viz the avoirdupois, we have now a ſecond ſtandard gallon adjuſted thereto, and therefore exceeding the former in the proportion of the avoirdupois weight to troy weight. From this latter ſtandard are raiſed two ſeveral meaſures, the one for ale, the other for beer.

The ſealed gallon at Guildhall, which is the ſtandard for wines, ſpirits, oils, &c. is ſuppoſed to contain 231 cubic inches; and on this ſuppoſition the other meaſures raiſed therefrom, will contain as in the following table: yet by actual experiment, made in 1688, before the lord-mayor and the commiſſioners of exciſe, this gallon was found to contain only 224 cubic inches: it was however agreed to continue the common ſuppoſed contents of 231 cubic inches; ſo that all computations ſtand on their old footing. Hence as 12 is to 231, ſo is $14\frac{12}{20}$ to $281\frac{1}{2}$ the cubic inches in the ale-gallon: but in effect the ale-quart contains $70\frac{1}{2}$ cubic inches, on which principle the ale and beer-gallon will be 282 cubic inches. The ſeveral diviſions and multiples of theſe meaſures, and their proportions, are exhibited in the following tables.

English MEASURES of Capacity for Liquids.

Wine-meaſure.

Solid inches										
$28\frac{7}{8}$	Pint									
231	8	Gallon								
4158	144	18	Rundlet							
$7276\frac{1}{2}$	252	$31\frac{1}{2}$	$1\frac{3}{4}$	Barrel						
9702	336	42	$2\frac{1}{3}$	$1\frac{1}{3}$	Tierce					
14553	504	63	$3\frac{1}{2}$	2	$1\frac{1}{2}$	Hogſhead				
19279	672	84	$4\frac{2}{3}$	$2\frac{2}{3}$	2	$1\frac{1}{3}$	Puncheon			
29106	1008	126	7	4	3	2	$1\frac{1}{2}$	Butt		
58212	2016	252	14	8	6	4	3	2	Tun.	

Ale-Meaſure.

Pints					
8	Gallon				
64	8	Firkin			
128	16	2	Kilderkin		
256	32	4	2	Barrel	
384	48	6	3	$1\frac{1}{2}$	Hogſhead.

Beer-Meaſure.

Pints					
8	Gallon				
72	9	Firkin			
114	18	2	Kilderkin		
288	36	4	2	Barrel	
533	54	6	3	$1\frac{1}{2}$	Hogſhead.

In the modern liquid-meaſures of foreign nations, it is neceſſary to obſerve, that their ſeveral veſſels for wine, vinegar, &c. have alſo various denominations, according to their different ſizes, and the places wherein they are uſed. The woeders of Germany, for holding Rheniſh and Moſelle wines, are different in their gauges; ſome containing 14 aumes of Amſterdam meaſure, and others more or leſs. The aume is reckoned at Amſterdam for 8 ſteckans or 20 verges, or for one-ſixth of a ton of two pipes; or four barrels of France or Bourdeaux, which one-ſixth at this latter place is called tiercon, becauſe three of them make a pipe or two barrels, and ſix the ſaid ton. The ſteckan is ſixteen mingles, or thirty-two pints; and the verge is, in reſpect of the ſaid Rheniſh and Moſelle and ſome other ſorts of wine, of ſix mingles; but in meaſuring brandy, it conſiſts of ſix one-ſixth mingles. The aume is divided into four anckers, and the ancker into two ſteckans, or thirty-two mingles. The ancker is taken ſometimes for four twenty-fourths of a ton, or four barrels, on which footing the Bourdeaux barrel ought to contain at Amſterdam (when the caſk is made according to the juſt gauge) twelve and ½ ſteckans, or two hundred mingles, wine and lees; or twelve ſteckans, or one hundred and ninety-two mingles racked wine; ſo that the Bourdeaux ton of wine contains fifty ſteckans, or eight hundred mingles, wine and lees; and forty eight ſteckans, or ſeven hundred and ſixty-eight mingles of pure wine. The barrels or poinçons of Nantes and other places on the river Loire, contain only twelve ſteckans Amſterdam meaſure. The wine-ton of Rochelle, Cognac, Charante, and the Iſle of Rhé, differs very little from the ton of Bourdeaux, and conſequently from the barrels and pipe. A ton of wine of Chaloſſe, Bayonne, and the neighbouring places, is reckoned ſixty ſteckans, and the barrel fifteen, Amſterdam meaſure.

The muid of Paris contains 150 quarts, or 300 pints, wine and lees; or 280 pints clear wine; of which muid 3 make a ton, and the fractions are,

The muid	containing	36 ſetiers
The ſetier		4 quarts
The quart		2 pints
The pint		2 chopins
The chopin		2 demi-ſetiers
The demi-ſetier		2 poiſſons.

The muid is alſo compoſed of pipes, or poinçons, quarteaux, queves, and demi-queves: theſe poinçons of Paris and Orleans contain about 15 ſteckans Amſterdam-meaſure, and ought to weigh with the caſk 666 lb. a little more or leſs. In Provence they reckon by milleroles, and the millerole of Toulon contains 66 Paris-pints, or 100 pints of Amſterdam, nearly; and the Paris pint is nearly equal to the Engliſh wine-quart.

The butts or pipes from Cadiz, Malaga, Alicant, Benecarlo, Saloe, and Mataro, and from the Canaries, from Liſbon, Oporto, and Fayal, are very different in their gauges, tho' in affreightments they are all reckoned two to the ton.

Vinegar is meaſured in the ſame manner as wine; but the meaſures for brandies are different: theſe ſpirits from France, Spain, Portugal &c. are generally ſhipped in large caſks called pipes, butts, and pieces, according to the places from whence they are exported, &c. In France, brandy is ſhipped in caſks called pieces at Bourdeaux, and pipes at Rochelle, Cognac, the Iſle of Rhé, and other neighbouring places, which contain ſome more and ſome leſs: even from 60 to 90 Amſterdam-verges or veertels, according to the capacity of the veſſels, and the places they come from, which being reduced into barrels, will ſtand as follows, viz.

At Rochelle, Cognac, the Iſle of Rhé, and the country of Aunis	27 veertels	per barrel.
At Nants, and ſeveral places of Bretagne and Anjou - -	29 veertels	
At Bourdeaux, and different parts of Guienne - - -	32 verges	
At Amſterdam and other cities of Holland - - - -	30 veertels	
At Hamburg and Lubeck - - - - -	30 verges	
At Embden - - -	27 verges	

In Provence and Languedoc, brandy is ſold by the quintal, the caſks included; and at Bruges, in Flanders, the verges are called ſeſters of 16 ſtops each, and the ſpirit is ſold at ſo much per ſtop.

Olive-oil is alſo ſhipped in caſks of various ſizes, according to the cuſtom of the places where it is embarked, and the conveniency of ſtowage. In England it is ſold by the ton of 236 gallons; and at Amſterdam by the ton of 717 mingles, or 1434 pints. In Provence it is ſold by milleroles of 66 Paris-pints: from Spain and Portugal it is brought in pipes, or butts, of different gauges; at the firſt place it is ſold by roves, whereof 40 go to the butt; and at the latter place by almoudas, whereof 26 make a pipe. Train-oil is ſold in England by the ton, at Amſterdam by the barrel.

MEASURES *of Capacity for Things dry*. Engliſh dry or corn-meaſures are raiſed from the Wincheſter-gallon, which contains 272 one-fourth ſolid inches, and ought to hold of pure running water 9 pounds 13 ounces. This ſeems to ſtand on the foot of the old wine-gallon of 224 cubic inches, 12 being to 14 twelve-twentieths as 224 to 272 one-fourth; but by an act of parliament made in 1697 it is decreed, that a round buſhel, 18½ inches wide, and 8 deep, is a legal Wincheſter-buſhel. Now ſuch a buſhel will only hold 2150.42 cubic inches, conſequently the gallon will hold 268.8 cubic inches, the diviſions and multiples whereof are in the following table:

Engliſh Dry or Corn MEASURE.

Solid inches					
33.6	Pint				
268.8	8	Gallon			
537.6	16	2	Peck		
2150.4	64	8	4	Buſhels	
17203.2	512	64	32	8	Quarter.

In the ſeveral parts of Europe, ſalt, which is a more ſtaple and current commodity than any other, is bought and ſold by different meaſures, according to the ſeveral places of its diſpatch: at Amſterdam it is ſold by the cent of 404 meaſures, or ſcheppels, which cent is reckoned to be ſeven laſts, or 14 tons, and the laſt is to weigh 4000 lb. the ſeven laſts making 28000 lb. called the cent of ſalt, which alſo contains 208 ſacks; though ſome of this commodity is much heavier than others. In the cities of France, it is ſold by the muid, whoſe ſize varies according to the different places of its manufacture and diſpatch. At Paris this meaſure is reckoned to contain 12 ſetiers, or 48 minots, which minot is alſo divided into other meaſures. The cent of ſalt from Marans, Brouage, Sude, and the Iſle of Rhé, contains 28 ſtricken muids, and each muid 24 boiſeaux, which yields at Amſtermam 11½ laſts, or 23 tons, more or leſs. In Copenhagen, the ſaid cent renders only 9½ laſts, the laſt being reckoned here equal to 18 tons, and 50 laſts to correſpond with 52 of Coningſberg, at which place the cent produces about 10 laſts, or 40,000 lb. At Riga the ſaid cent yields the ſame meaſure as at Coningſberg, and about 6¼ laſts, of Riga, make the great cent of Amſterdam. The ſaid French cent produces at Dantzick from 11½ to 12 laſts, of which laſts from 7¼, to 7½, make likewiſe the great cent of Amſterdam. At Stetin in Pomerania, the French cent yielded 10 laſts, making 40,000 meaſure and weight of the ſaid place. In Portugal it is bought by the muid, of which four make a laſt, and ſeven the cent of Amſterdam. At Alamat and Ivica it is ſold by the modin, which weighs from 27½ to 28 hundred weight Engliſh.

MEASURE *of Wood*, for firing. See *Cord of Wood*.

MEASURE *for Horſes*, is the hand, which by ſtatute contains four inches.

MEASURE, the cadence and time obſerved in poetry, dancing, and muſic, to render them regular and agreeable. See *Metre*

MEASURE, in muſic, the interval or ſpace of time which the perſon who beats time take between the raiſing and falling of his hand, in order to conduct the movement ſometimes quicker and ſometimes ſlower, according to the muſic or ſubject that is to be ſung or played.

MECHANICS, that branch of mathematics which conſiders motion and moving powers, their nature and laws, with their effects in machines. See *Machine*.

The knowledge of mechanics is one of thoſe things, ſays Mr. Mac Laurin, that ſerves to diſtinguiſh civilized nations from barbarians. It is by this ſcience, that the utmoſt improvement is made of every power and force in nature; and the motions of the elements, water, air, and fire, are made ſubſervient to the various purpoſes of life: for however weak the force of man appears when unaſſiſted by this art; yet, with its aid, there is hardly any thing above his reach. It is diſtinguiſhed, by Sir Iſaac Newton, into practical and rational mechanics; the former of which treats of the mechanical powers, viz. the lever, ballance, axis and wheel, pulley, wedge, ſcrew, and inclined plane. See *Lever*, *Ballance*, &c.

Rational mechanics comprehends the whole theory of motion; ſhews, when the powers or forces are given, how to determine the motions that are produced by them; and, converſely, when the phænomena of the motions are given, how to trace the powers of forces from which they ariſe. See *Motion*.

MECHANICAL, whatever relates to mechanics: thus we ſay, mechanical powers, cauſes, &c. See *Power*, *Cauſe*, &c. The mechanical philoſophy is the ſame with what is otherwiſe called corpuſcular philoſophy. See *Corpuſcular*.

* MECKLENBURG, a duchy of Germany, in Lower Saxony, is bounded by the Baltic ſea on the north; by Pomerania on the eaſt; by Brandenburg on the ſouth; and by the duchy of Holſtein on the weſt; it being about one hundred miles long, and ſixty broad. It was formerly inhabited by the Vandals. It is a very fruitful country, is well watered, and abounds in corn, paſtures, and game. It is extremely well ſeated on the Baltic for a foreign trade, ſome of the principal hans towns lying in this province, particularly Wiſmar. It is ſubject to the dukes of Mecklenburg, and is divided between the dukes of Mecklenburg Strelitz, and Mecklenburg Schwerin. There was a city called Mecklenburg, which was very large; but was deſtroyed in the wars between the Chriſtians and Vandals.

MEDAL, a piece of metal in the form of coin, intending to convey to poſterity the portrait of ſome great perſon, or the memory of ſome illuſtrious action. The parts of a medal are the two ſides, one of which is called the face, or head, and the other the reverſe. On each ſide is the area, or field, which makes the middle of the metal; the rim, or border; and the exergue; and on the two ſides are diſtinguiſhed the type, or the figure repreſented, and the legend, or inſcription. There was formely no difference between money and medals. An old Roman had his purſe full of the ſame pieces that we now preſerve in cabinets. As ſoon as an emperor had done any thing remarkable, as gaining a victory, giving up a tax, or the like, it was immediately ſtamped on a coin, and became current through his whole dominions. This was a pretty device to ſpread abroad the virtues of an emperor, and make his actions circulate; and thus a freſh coin was a kind of gazette, that publiſhed the lateſt news of the emperor. The uſe of medals is very conſiderable: they give a very great light into hiſtory, in confirming ſuch paſſages as are true in old authors, in reconciling ſuch as are told in different manners, and in recording ſuch as have been omitted. In this caſe, a cabinet of medals is a body of hiſtory. It was indeed the beſt way in the world to perpetuate the memory of great actions, thus to coin out the life of an emperor, and to put every exploit into the mint. It was a kind of printing before the art was invented; and they have this advantage over books, that they tell their ſtory quicker, and ſum up a whole volume in twenty or thirty reverſes. They are, indeed, the beſt epitomes in the world, and let us ſee, with one caſt of the eye, the ſubſtance of above an hundred pages. Another uſe of medals is, that they not only ſhew the actions of an emperor, but at the ſame time mark out the year in which they were performed: for as every exploit has its date ſet to it, a ſeries of an emperor's coins is his whole life digeſted into annals. A medalliſt, upon the firſt naming of an emperor, will immediately tell his age, family and life. To remember where he enters in the ſucceſſion, he only conſiders in what part of the cabinet he lies; and by running over in his thoughts ſuch a particular drawer, will give an account of all the remarkable parts of his reign Nor are medals of leſs uſe in architecture, painting, poetry, &c.

MEDALLION, or MEDALION, a medal of an extraordinary ſize, ſuppoſed to be anciently ſtruck by the emperors for their friends, and for foreign princes and embaſſadors; but that the ſmallneſs of their number might not endanger the loſs of the devices they bore, the Romans generally took care to ſtamp the ſubject of them upon their ordinary coins. Medallions, in reſpect of the other coins, were the ſame as modern medals in reſpect of modern money: they were exempted from all commerce, and had no other value but what was ſet upon them by the fancy of the owner. Medallions are ſo ſcarce that there cannot be any ſet made of them, even though the metals and ſizes ſhould be joined promiſcuouſly.

MEDIAL, or ALLIGATION MEDIAL, in arithmetic. See *Alligation*.

MEDIASTINUM, in anatomy, a double membrane continuous to the ſternum, ſituated under it, and adhering firmly to it. The uſes of the mediaſtinum are two. The firſt is to divide the breaſt longitudinally into two parts, by which ſeveral great purpoſes are anſwered. The ſecond general uſe of the mediaſtinum is, to ſupport the heart in its pendulous ſtate, for the benefit of its free motion, eſpecially when we lie on our backs.

MEDIATE, or INTERMEDIATE, ſomething that ſtands between and connects two or more terms, conſidered as extremes; in which ſenſe it is oppoſed to immediate.

MEDICINE, *Medicina*, or PHYSIC, the art of healing, which, ſays Boerhave, conſiſts in the knowledge of thoſe things by whoſe application life is either preſerved ſound and healthy, or when diſordered, again reſtored to its priſtine healthineſs. Medicine is undoubtedly of the ſame date with diſeaſes, and diſeaſes are almoſt as ancient as the world itſelf. Men were long their own phyſicians; and it is hard to fix the time when it firſt was made an art and profeſſion. In certain countries, thoſe who had been cured of ſome diſeaſe, wrote down how and by what remedies it had been effected, and depoſited thoſe accounts in the temples for the inſtruction of others in the like caſe. In other places, as Egypt and Babylon, the ſick were expoſed in public, that ſuch as paſſed by who might have been cured of the ſame diſeaſe, might give them advice. The Egyptians cultivated medicine both more anciently and more learnedly than any other people. The Greeks diſputed that glory with them, or at leaſt followed them very cloſe in it. Before the Trojan war, Chiron the Theſſalian, ſurnamed the Centaur, who was Achilles's governor, made himſelf famous by the cure of wounds, and knowledge of ſimples. Æſculapius, Chiron's diſciple, did not give place to his maſter. Celſus places Pythagoras, Empedocles, and Democritus, in the number of celebrated phyſicians. Phyſicians were diſtinguiſhed into different claſſes, namely, empirics, becauſe they followed experience almoſt entirely; others, of whom Hippocrates was the chief, joined reaſon with experience, hence called dogmatic, or rational. Hippocrates firſt applied himſelf to the ſtudy of natural things in general, and afterwards to that of the human body in particular. He made a great proficiency in all the parts of phyſic. He was born 460 years before Chriſt, and was cotemporary with Democritus. He compiled a body of Greek medicine, which continued a long time ſacred and unaltered, and was the ſtanding practice of many ages. At length Aretæus the Cappadocian digeſted it into an orderly body; after which it was ſeveral times altered and improved, till at length it was taken in hand by Galen of Pergamus, who lived in the year 131. He aſcribed all he knew to Hippocrates, and explained every thing by the rigid doctrines of the Peripatetics; and did both a great deal of ſervice, and a great deal of miſchief to the art; he being the firſt who introduced the doctrine of the elements, the cardinal qualities, the degrees, the four humours, &c. into medicine, and on which he made the whole art depend. Other famous phyſicians after Hippocrates were Diocles Caryſtius, Paraxagoras, Chryſippus, Eraſiſtrates, Herophilus, Serapion, Apollonius, Glaucias, Heraclides, Tarentinus, Dionyſius, Crito, Menodotus, Theodas, Aſclepiades, Themiſon, Theſſalus, Soranus, Cælius Aurelianus, Celſus, Oribaſius, Aetius, Alexander Trallianus, Paulus Ægineta, Actuarius, Myrepſus, &c. Phyſic had for ſome time got almoſt entirely into the hands of the Arabians, till the end of the fifteenth century, when the original authors, moſt of which they had tranſlated, came to be read in their own language. At length the immortal Harvey, overturning the whole theory of the ancients, by the diſcovery of the circulation of the blood, laid a new and certain baſis for medicine. Since his time it is improved by ſure diſcoveries in anatomy, chemiſtry, mechanics, &c.

We are told by Pliny, that Archagathus of Peloponneſus was the firſt phyſician who came to Rome, in the conſulſhip of L. Æmilius and L. Julius, A. U. C. 535. that is, the Romans till his arrival uſed only the ſimple empiric kind of phyſic, ſuch as was practiſed by the firſt men. It ſeems, however, that ſeveral phyſicians came from Greece to Rome, though Cato had oppoſed it with his whole power.

Till Pliny's time, of all profeſſions, that of medicine, gainful as it was, was the only one no Roman had followed, becauſe they thought it beneath them.

Without entirely deciding as to the merit of the ancient and modern phyſic, they have each their peculiar advantages, which render both highly eſtimable; and doubtleſs the experience of many ages muſt have added conſiderable lights to the knowledge of the ancients. The new diſcoveries which have enriched the phyſic of the moderns may give it the preference to that of the ancients.

Whether we conſider our bodies or our medicines, phyſic muſt be very precarious. Our bodies are more compounded and unequal than other bodies are; moſt other creatures live on a ſimple diet, and are regular in their appetites; whereas man feeds almoſt upon every thing, and where appetite fails, invention is called in to ſwell the account by high ſauces and rich ſpices. Hence proceed ſuch variety of diſeaſes as diſtract the phyſician's ſkill. A healthy conſtitution is eaſily reſtored when out of order, nature in a great meaſure does its own work; whereas, in a diſordered body, a phyſician muſt give a new conſtitution before he can perfect the cure. Though our materia medica be large enough, and to look into our diſpenſatories, one would think no diſeaſe incurable; yet the miſchief is, all thoſe fine medicines do not always anſwer in the application, nor have they been found ſo ſovereign in our bodies as they are in our books: all which things have ſo diſtracted our phyſicians, that they vary even in the moſt common method. In one age alkalies are in faſhion, and in the next acids begin to recover credit: bleeding is practiſed by one nation, and condemned by their neighbours, &c.

Medicine is divided into five principal branches: the firſt conſiders the human body, life, and health, and the effects flowing therefrom; this is called phyſiology, the doctrine of the œconomy or uſe of the parts; and its objects are called res naturales, or things according to nature.

The ſecond branch conſiders the diſeaſes of the human body, their differences, cauſes, and effects: as it conſiders diſeaſes, it is called pathology; as it inquires into the cauſes, ætiology; when it examines their differences, it is called noſology; and when it explains their effects, ſymptomatology. The objects of this branch are called res præternaturales, or beyond nature.

The third branch conſiders the ſigns or ſymptoms, and how to apply them to uſe; ſo as to judge both in a whole and diſeaſed body what is or will be the degree, order, and effect of the health or diſeaſe. This is called ſemeiotica. Its objects are things both natural, non-natural, and preter-natural.

The fourth branch conſiders the remedies, and their uſe, whereby life may be preſerved; whence it is called hygieine. Its objects are what we ſtrictly call non-natural.

The fifth furniſhes the materia medica, its preparation and manner of exhibiting, ſo as to reſtore health; and is called therapeutica, comprizing the diætetica, pharmaceutica, chirurgica, and iatrica.

MEDICINES, *Medicamenta*, ſuch ſubſtances as ſerve to reſtore health.

MEDIETAS LINGUÆ, in law, a jury, or inqueſt impannelled, of which the one half are natives of this land, and the others foreigners.

* MEDITERRANEAN SEA, a great gulph of the Atlantic ocean, reaching from the Straights of Gibraltar to the coaſt of Syria, having the African coaſt to the ſouth, and Europe and Aſia to the north. It forms ſeveral gulphs. The chief ſtraights are thoſe of Gibraltar, Meſſina, Gallipoli, Conſtantinople, Caffa, and the mouth of the gulph of Venice. The ebbing and flowing of the tide are not perceived but in four places, viz. the harbour of Tunis, the ſtraight of Meſſina, in the gulph of Venice, and the ſtraight of Negropont.

MEDIUM, in logic, the mean or middle term of a ſyllogiſm, being an argument, reaſon, or conſideration for which we affirm or deny any thing; or, it is the cauſe why the greater extreme is affirmed or denied of the leſs in the concluſion. Medium, in philoſophy, is that ſpace or region through which a body in motion paſſes to any point; thus æther is ſuppoſed to be the medium through which the heavenly bodies move; air, the medium wherein bodies move near our earth; water, the medium wherein fiſhes live and move; and glaſs is alſo a medium of light, as it affords it a free paſſage. That denſity or conſiſtence in the parts of the medium, whereby the motion of the bodies in it is retarded, is called the reſiſtance of the medium, which, together with the force of gravity, is the cauſe of the ceſſation of the motion of projectiles.

MEDLAR, *Meſpilus*, in botany, &c. See *Meſpilus*.

MEDULLA OBLONGATA, the lower and medullary part of the cerebrum and cerebellum, formed into a kind of tail, and extended to the great foramen, or hole in the occipital bone of the cranium, where it gives origin to the ſpinal marrow, and to the nerves of the brain. See *Brain* and *Nerve*.

MEDULLA SPINALIS, or ſpinal marrow, is a continuation of the medulla oblongata of the brain, and forms, as it were, a tail to that part. It is included in a kind of bony canal, formed by the vertebræ, and in this is continued from the head to the extremity of the os ſacrum. Its length is therefore the ſame with that of the ſpina dorſi, which is different in perſons of different ſtature. The uſes of the ſpinal marrow are, to give origin to thirty-two pairs of nerves, which are principally diſtributed to the limbs and external parts; and to ſecrete and prepare a nervous fluid.

MEDUSA, in fabulous hiſtory, the eldeſt daughter of Ceto and the ſea-god Phorcus, went with her two ſiſters to inhabit the iſle of Gorgons, from which name they were called the Gorgons. Neptune falling in love with Meduſa, chiefly on account of the beauty of her hair, carried her off, and took her to the temple of Minerva, where he debauched her; when Minerva being enraged at the profanation of her temple, transformed Meduſa's hair into ſnakes, and cauſed thoſe who looked at her to be turned to ſtone. But Perſeus being furniſhed with Mercury's winged ſhoes, and the ſword with which he had killed Argus, attacked Meduſa, and cut off her head, and from her blood ſprung up Pegaſus and Chryſaor.

* MEDWAY, one of the largeſt rivers in England. It is characterized by Milton, *Medway the Smooth.* It riſes in Aſhdown foreſt, in Suſſex, and taking its courſe moſtly north-eaſt, paſſes by Penſhurſt, Tunbridge, Maidſtone, and Rocheſter, in Kent, beyond which it is ſeparated into two branches by the iſle of Sheppy, the one called the Eaſt Swale, and the other the Weſt Swale. The latter, which is the principal entrance into this river, is defended by the fort of Sheerneſs. The Eaſt Swale leads to Milton and Feverſham, where are ſome of the fineſt oyſter-beds in the world. But the moſt remarkable particular about this river is its being the ſtation of the royal navy of Great Britain, moſt of the firſt and ſecond rate men of war being built and laid up at Chatham; below which the Medway falls into the Thames. From Rocheſter to Blackſtakes, which is about fourteen miles, the channel of the Medway is ſo deep all the way, the banks ſo ſoft, and the reaches ſo ſhort, that this is one of the ſafeſt and beſt harbours in the world, eighty-gun ſhips riding a-float at low water within muſket-ſhot of Rocheſter bridge. They ride as in a mill-pond or wet dock, only that being moored at the chains, they ſwing up and down with the tide; but as there is room enough, they cannot ſwing foul of one another. And no accident has been known, except the loſing of the Royal Catharine of 100 guns, in the great ſtorm of 1703; when being driven from her moorings, and ſtriking againſt the bank, ſhe ſunk ſo as never to be weighed up, as ſhe was an old veſſel.

* MEGÆRA, in fabulous hiſtory, one of the furies, who, according to the poets, were the daughters of Acheron and Night.

MELANCHOLY, in medicine, a ſpecies of madneſs, being a kind of delirium without a fever, uſually attended with fear, heavineſs, and ſorrow, without any apparent cauſe. It is infinitely varied according to the temperament and ideas of the perſon affected with it.

The cauſes evidently productive of melancholy, ſays Boerhaave, are obſerved to be,

1. All things which fix, exhauſt, or diſturb the nervous fluid of the brain; ſuch as violent and ſudden frights, intenſe thinking upon any ſubject, exceſſive love, watchings, ſolitude, fear, and hyſteric diſorders.

2. Such things as hinder and diſturb the generation, reparation, circulation, and various ſecretions and excretions of the blood, eſpecially in the ſpleen, ſtomach, omentum, pancreas, meſentery, inteſtines, liver, uterus, and hæmorrhoidal veſſels: ſo that, of conſequence, melancholy may be produced by the hypochondriacal diſorder; by acute diſeaſes ill cured, and eſpecially a phrenitis and burning fever; by an exceſs of all the ſecretions and excretions; by ſuch aliments and drinks as are cold, tenacious, terreſtrial, tart, and aſtringent; by violent heat long protracted and parching the blood; as alſo by a ſtagnant, moiſt, and cloudy air.

3. A naturally black, hairy, dry, ſlender, and robuſt conſtituion of body, a middle age, a quick, penetrating, and diſcerning genius.

If this diſorder continues long, it produces ſtupidity, epilepſies, apoplexies, madneſs, convulſions, blindneſs, ſurpriſing fancies, laughter, weeping, ſinging, ſighs, eructations, flatulencies, anxieties; an urine ſometimes copious and limpid like water, and at others highly thick; a retention, accumulation of the excrementitious blood in the veſſels of the abdominal viſcera, and often a ſudden excretion of it; obſtinate coſtiveneſs, frequent ſpitting of a thin matter, and an incredible ability of enduring watchings, hunger, and cold.

This diſorder has often been cured by a ſupervening unſeemly itch, ſometimes reſembling an elephantiaſis; by numerous and large varices; by a copious diſcharge from the turgid hæmorrhoidal veins; and an evacuation of the black bile by vomit and ſtool

Patients labouring under this diſorder are generally injured by all medicines which impair the ſtrength, and evacuate too forcibly; as alſo by thoſe which throw the humours into too violent commotions, whether cordials, or medicines of whatever other denomination.

Hence the beſt method of curing this diſorder is, after a due obſervation of the firſt cauſes, and the variety of patients conſtitutions, to accommodate various medicines to theſe cauſes, and various conſtitutions.

The ſeveral intentions of cure to be purſued, therefore, are, 1. To rouſe, augment, and regulate the fluids of the brain and nerves; which is done, firſt, by diverting the mind from its uſual object to others of an oppoſite nature: ſecondly, by inducing cautiouſly another diſpoſition, or affection of mind, oppoſite to melancholy: thirdly, by humouring the perverſe and falſe turn of the imagination: or, fourthly, by frequently oppoſing it with great vigour.

2. To remove thoſe obſtructions which are either the cauſe or the effect of a perverted imagination, by ſoftening, inciding, and ſtimulating the obſtructing matter, by means of mineral waters, whey, viſceral, hepatic, and antihypochondriac decoctions, waters invigorated with lixivial or compound ſalts, laxative preparations of mercury, emetics, motion, exerciſe, riding, ſailing, uterine medicines, and ſuch as promote the lochia, remedies which procure hæmorrhoidal diſcharges, baths, liniments, and plaſters.

3. To alleviate the ſymptoms by veneſection, immerſion in cold water, and the uſe of carminatives and opiates.

4. After due evacuations, to exhibit ſuch things as are from experience known to exhilerate the mind, and corroborate all the parts of the body.

From what has been ſaid, it is obvious that the perfect cure of this diſorder, as well as of great many others falſly accounted incurable, conſiſts in the correction of the bilis atra, or melancholic humour.

When melancholy increaſes ſo far as to bring on an agitation of the fluids of the brain, capable of driving the patient into a raging fury, the diſorder is called madneſs.

This only differs in degree from a dejected melancholy, is its offspring, ariſes from the ſame cauſes, and is generally to be cured by the ſame medicines.

In madneſs the muſcles are generally ſurpriſingly ſtrong, the patient is afflicted with watchings, incredibly capable of enduring hunger and cold, diſtracted by terrible imaginations, and ſubject to thoſe diſorders called lycanthropia and cynanthropia; which ſee.

It is obſervable, that, upon diſſecting thoſe who have died of madneſs, the brain has been found dry, hard, and friable, with its cortical ſubſtance of a yellow colour, and its veſſels turgid, varicoſe, and diſtended with black and viſcid blood.

It is alſo obſervable, that, during this diſorder, all the excretions have, in like manner, almoſt ceaſed.

Unexpected precipitation into the ſea, and a ſubmerſion in it, continued as long as poſſible, conſtitute the principal remedy for it.

Madneſſes, obſtinate againſt all remedies, have often been removed upon the approach of varices, hæmorrhoidal diſcharges, dyſenteries, dropſies, copious ſpontaneaus hæmorrhages, tertian and quartan fevers.

Such a ſort of madneſs ſometimes ariſes after the body is, by an autumnal, violent, and long-continued intermittent fever, weakened and exhauſted, both by the force of the diſeaſe, and repeated veneſections and purgings. The madneſs is alſo generally brought on again by theſe very means.

This ſpecies of the diſorder is only to be cured by the uſe of reſtoratives, cardiacs, and corroboratives, long perſiſted in; but, if it is treated with evacuation, it brings on an atrophy, a weakneſs, and an unſurmountable fooliſhneſs.

But a madneſs ariſing in robuſt vigorous perſons in the flower of their age, of hot and plethoric habits, is to be cured by repeated veneſections, interpoſing a briſk purge between each; and when the diſorder is alleviated, it is to be treated with opiates and cardiacs. *Boerhaave's Aphoriſms.*

MELANE, among phyſicians. See *Alphos.*

MELANTERIA, in natural hiſtory, a very beautiful foſſil, of a denſe, compact, and regular texture, and of an extremely bright pale yellow, reſembling nothing ſo much as the pureſt gold.

MELASSES, or MOLASSES. See *Melaſſes.*

MELICERES, in ſurgery, a kind of encyſted tumours, ſo called when their contents are of the conſiſtence of honey.

MELILOT, *Melilotus*, in botany, a plant which is annual or biennial, and found in flower, in hedges and corn-fields, greateſt part of the ſummer.

Melilot has been ſaid to be reſolvent, emollient, anodyne, and to participate of the virtues of chamomile. The principal uſe of the plant has been in clyſters, fomentations, and other external applications: it formerly gave name to one of the officinal plaſters; which received from the melilot a green colour and an unpleaſant ſmell, without any addition to its efficacy.

MELODY, in muſic, the agreeable effect of different ſounds, ranged and diſpoſed in ſucceſſion; ſo that melody is the effect of a ſingle voice or inſtrument, by which it is diſtinguiſhed from harmony.

MELON, in botany, ſays Miller, a diſtinct genus of plants, the flowers of which conſiſt only of one leaf each, and are wide at the mouth, and divided into ſeveral ſegments, wholly reſembling the flowers of cucumbers. Of theſe alſo ſome are male or ſterile flowers, having no embryo fruit; others are fruitful or female flowers, having an embryo which ripens into a large fruit of an oval figure, ſometimes ſmooth, ſometimes rough, divided into three cells, and containing oblong ſeeds; each of theſe cells ſeems alſo divided into two.

The proper management and culture of melons is this: the ſeeds ſhould be procured from good melons, produced in ſome diſtant garden; for if ſowed on the place where it was raiſed and ripened, it is very apt to degenerate. This ſeed ſhould be kept three years before it is ſowed, and it ſhould be ſowed at two ſeaſons. The firſt for the early crop, to be raiſed under frames, ſhould be ſown in January or the beginning of February; the ſecond, to be raiſed under bell or hand glaſſes, is to be ſowed in March, and this is the ſowing which produces the general crop of melons, which ripen in July and Auguſt. About a week before the time of ſowing the ſeed, ſome dung ſhould be prepared in a heap with the litter, or ſome coal aſhes, and the ſame methods uſed in the early cucumbers, for the firſt crop: but for the ſecond, which is of more general uſe, the ſowing may be upon the upper ſides of the hot-beds that were for the early melons or cucumbers, or on a freſh moderate hot-bed. When the young plants are come up, they muſt be removed to another hot bed, and covered with hand glaſſes, and watered and ſhaded till they have taken root; and after this, they muſt have as much air and ſun as the ſeaſon will permit, and their ſtalks ſhould be earthed up as they grow, which will vaſtly ſtrengthen them.

In the beginning of April the plants will begin to ſhew their rough leaves; a parcel of dung is then to be prepared with litter and coal-aſhes. The common quantity is a load to five holes; a trench muſt then be dug, which ſhould be ten inches deep, if the ſoil be dry, but only three, if it be wet. The dung muſt be evenly laid in this, and heaped up to three feet high; then the place intended for the holes muſt be marked out, at each of which muſt be laid a baſket full of light rich earth, thruſting a ſtick of two feet long into the middle. Then cover the dung all over with the earth, which was dug up out of the trench, laying it ſmooth, and about three inches thick; then the glaſſes are to be placed cloſe down over the place where each of the ſticks is, and in two days the earth will be warm enough to receive the ſeedling plants. The ſticks are now to be taken out, and the earth formed in the places into a hollow like a baſon, that it may retain the water which is given to the plants. The plants are then to be taken up, and two ſtrong and thriving ones put into each of theſe holes, which muſt be watered and ſhaded till they have taken root. The plants having taken root, and thruſt out a fourth leaf, the top of each of them ſhould be pulled off, in order to force out ſhoots from the bottom; and as the weather becomes warmer, the glaſſes muſt be raiſed with ſtones on the ſouth ſide, to give them air, and about twice a week they ſhould have a little water.

About the middle of May the ſtalks of the plants will begin to preſs upon the glaſſes on every ſide, and the glaſſes are then to be raiſed up on bricks, to give them room to run out; and they ſhould be pegged down with forked ſticks, and turned into a proper direction for their running, ſo that they may be out of the way of entangling one with another: they ſhould now, if the weather be ſevere, be ſheltered with mats in the night, and watered gently at times. When the ſtalks of the plants are grown to the edges of the bed, the earth muſt be raiſed with old dung buried under it, till it be upon a level with the beds, for two feet wide on each ſide. The branches are here to be trained in a proper courſe, and the glaſſes are to be left over the roots of the plants; and after this, what water is given them to be ſprinkled all over the plants. When the fruit begins to appear, the waterings muſt be very gentle on the plants; but it will be proper to ſoak the earth well with large quantities of water about the beds, which will ſpread a moiſture even to the roots of the plants; from this time the plants ſhould be gently watered twice a week, and that always in the evening. When the melons are grown of the ſize of a tennis ball, a piece of tile ſhould be laid under each to keep them from the ground. As they afterwards approach to ripeneſs, they ſhould be turned ſeveral times, that they may ripen equally on every ſide; and if the weather be not very favourable, they ſhould be covered with glaſſes. If the melon is deſigned to be eaten as ſoon as cut, it ſhould be ſuffered to remain on the plant till it changes pretty yellow, and the ſtalk begins to ſeparate from the fruit; but if it is to be kept two or three days after cutting, it muſt be always cut proportionably earlier.

It is a practice with many to take off the leaves about the fruit, that it may have more ſun; but it is wrong, and the fruit is always the worſe taſted for it, and the ſkin is hard and tough. *Miller's Gard. Dict.*

When a melon is perfectly fine, it is full, without any vacuity: this is known by knocking upon it, and when cut the fleſh muſt be dry, no water running out, only a little dew, which ſhould be of a fine red colour. Large melons are not to be coveted, but firm and well-flavoured ones.

* MELPOMENE, in fabulous hiſtory, one of the nine Muſes, and the inventreſs of tragedies. She is commonly repreſented with a ſerious countenance, and in a theatrical dreſs. holding crowns and ſceptres in one hand, and a dagger in the other.

MEMBRANE, in anatomy, a pliable texture of fibres, interwoven together in the ſame plane.

MEMOIRS, in matters of literature, a ſpecies of hiſtory, written by perſons who had ſome ſhare in the tranſactions they relate.

MEMORY, *Memoria*, a faculty of the human mind, whereby it retains or keeps the ideas it has once perceived. See *Idea*.

Memory, ſays Mr. Locke, is, as it were, the ſtorehouſe of our ideas; for the narrow mind of man not being capable of having many ideas under view at once, it was neceſſary to have a repoſitory in which to lay up thoſe ideas which it may afterwards have uſe of. But our ideas being nothing but actual perceptions in the mind, which ceaſe to be any thing where there is no perception of them; this laying up of our ideas in the repoſitory of the memory, ſignifies only this; that the mind has a power, in many caſes, to revive perceptions it has once had, with this additional perception annexed to them, that it has had them before. And it is by the aſſiſtance of this faculty, that we are ſaid to have all thoſe ideas in our underſtandings which we can bring in ſight, and make the ſubjects of our thoughts without the help of thoſe ſenſible qualities which firſt imprinted them there.

Attention and repetition help much to the fixing ideas in our memories: but thoſe which make the deepeſt and moſt laſting impreſſions, are thoſe which are accompanied with pleaſure and pain. Ideas but once taken in and never again repeated, are ſoon loſt; as thoſe of colours in ſuch as loſt their ſight when very young.

The memory of ſome men is tenacious even to a miracle: but yet there ſeems to be a conſtant decay of all our ideas, even of thoſe which are ſtruck deepeſt; and in minds the moſt retentive: ſo that if they be not ſometimes renewed, the print wears out, and at laſt there remains nothing to be ſeen.

This faculty other animals ſeem to have to a great degree, as well as men, as appears by birds learning of tunes, and their endeavour to hit the notes right. For it ſeems impoſſible that they ſhould endeavour to conform their voices, as it is plain they do, to notes whereof they have no idea.

MENDICANTS, or begging friars, ſeveral orders of religious in Popiſh countries, without any ſettled revenues, and are ſupported by the charitable contributions they receive from others.

MENIALS, in law books, domeſtic or houſhold ſervants, who live under their lord or maſter's roof.

MENINGES, or MENYNGES, in

anatomy, a name given to the dura and pia mater of the brain.

MENISCUS, in optics, a lens convex on one ſide, and concave on the other.

For finding the focus of a meniſcus, the rule is, as the difference of the ſemi-diameters of the concavity and convexity to the ſemi-diameter of the concavity; ſo is the diameter of the convexity to the focal diſtance.

MENSALS, *Menſalia*, in church hiſtory, ſuch livings as were formerly united to the tables of religious houſes, and hence called menſal benefices.

MENSES, *Catamenia*, fluors, courſes, in medicine, are the monthly evacuations from the uterus of women not with child, and not giving ſuck.

The common cauſe, ſays Dr. Mead, of the ſtoppage of the menſtrual diſcharges is the blood's lentor; whereby this fluid becomes incapable of forcing the ſphincters of the ducts deſtined by nature for this evacuation. For it is not from the burſted arteries of the uterus, which is the common opinion, that the blood iſſues every month, but from veſſels peculiarly appropriated to this office. And this lentor or thickneſs of the blood changes the lively colour of the face into a greeniſh pale and wan complexion.

The proper medicines, in this diſtemper, are thoſe which are capable of increaſing the blood's circulation, and attenuating the viſcid humours: and ſuch are all bitters, joined with aromatics, as alſo many preparations of ſteel. But to theſe ought to be premiſed blood-letting and cathartics blended with calomel. The tinctura ſacra is alſo an excellent medicine.

But of all the moſt powerful emmenagogues, I have found ſo ſingular virtue in black hellebore, that I hardly remember it ever failed anſwering my expectations. My way of ordering it is, a tea-ſpoonful of tincture of black hellebore in a glaſs of warm water, to be taken twice a day. And I have obſerved this remarkable circumſtance, that whenever, either from a bad conformation of the parts or any other cauſe, this medicine had not the deſired effect, the blood was forced through ſome other paſſages; which is a manifeſt proof of the great power of this medicine in ſpurring the blood forward.

But likewiſe the menſtrual diſcharges frequently run to exceſs. In that caſe the flux is to be reſtrained; which, after letting blood, is effected both by thoſe medicines which condenſe and inſpiſſate the blood, and by thoſe which allay its heat. Of the firſt ſort, the principal are ſuch as participate of vitriol or alum; eſpecially the tincture of roſes; or a powder compoſed of alum three parts, and dragon's blood one part, melted together. But the heat of the blood, and its conſequence, the flux, is more powerfully checked by the Peruvian bark, than by any other medicine whatſoever. *Mead.*

MENSTRUUM, or DISSOLVENT, in chemiſtry, a body which, when artificially applied to another, divides its ſubtility, ſo that the particles of the ſolvent remain thoroughly intermixed with thoſe of the ſolvend. It was called a menſtruum, becauſe the chemiſts, in its application to the ſolvend firſt uſed a moderate fire, for a philoſophical month, or forty days; and hence aroſe the name of menſtrual ſolvent, at length barely a menſtruum. Sir Iſaac Newton accounts for the action of menſtruums from the acids wherewith they are impregnated, which are found to be endued with a ſtrong attractive force, wherein their activity conſiſts.

MENSURATION, *Menſuratio*, the act or art of meaſuring lines, ſuperficies, or ſolids.

MENTHA, mint, in botany, a perennial herb, with ſquare ſtalks, ſerrated undivided leaves ſet in pairs; and ſpikes of monopetalous flowers, each of which is cut into four ſections, and followed by four ſeeds incloſed in the cup.

MENTHA *Vulgaris*, mint, hartmint, ſpearmint, with oblong, narrow, pointed leaves, joined cloſe to the ſtalk; and ſmall purpliſh flowers ſtanding in long ſpikes on the tops. It is a native of the warmer climates, common in our gardens, and flowers in June and July.

This herb has a ſtrong agreeable aromatic ſmell, and a bitteriſh, roughiſh, moderately warm taſte. It is in general uſe as a reſtringent, ſtomachic, and carminative: in vomitings and weakneſs of the ſtomach, there are perhaps few ſimples of equal efficacy.

MENTHA *Piperitis*, pepper-mint, a native of this kingdom; and ſo far as is known, of this kingdom only: it has of late been received into general practice as a medicine, and is now raiſed plentifully in gardens, and does not appear to loſe any thing of its virtue with the change of ſoil. This ſpecies of mint has a very penetrating ſmell, a ſtrong and warm taſte, pungent and glowing like pepper, and ſinking as it were into the tongue. It is a medicine of great importance in flatulent colics, hyſteric depreſſions, and other like complaints; exerting its activity as ſoon as taken into the ſtomach, and diffuſing a glowing warmth through the whole ſyſtem; yet not liable to heat the conſtitution near ſo much as might be expected from the great warmth and pungency of its taſte.

MERCATOR's Chart, a projection of the earth's ſuperficies in plano, where the meridians are ſtraight lines, parallel to, and equidiſtant from each other. The parallels of latitude are alſo ſtraight lines, and parallel to each other, but the diſtance between them increaſes from the equinoctial towards either pole, in the ratio of the ſecant of the latitude to the radius.

If the ſuperficies of the terreſtial globe be ſuppoſed to be taken off, and extended on a plane, ſo as to make the meridians parallel to each other, and the degrees of longitude every where equal, it is eaſy to conceive that it muſt be productive of moſt notorious errors; for an iſland in latitude 60°, where the radius of the parallel is only equal to one half of the radius of the equator, will have its length from eaſt to weſt diſtorted in a double ratio to what it was on the globe; that is, its length from eaſt to weſt, in compariſon of its breadth from north to ſouth, will be repreſented in a double proportion to what it really is; whence it follows, that in whatever proportion the degrees of any parallel are increaſed or diminiſhed, by a projection in plano, the degrees of longitude ought to be increaſed or diminiſhed in the ſame ratio; for otherwiſe the true bearings and diſtances of places will be loſt, as in the caſe of the plain-chart, where the degrees of latitude and longitude are all equal.

Though this projection is generally called Mercator's projection, yet our countryman Mr. Wright, had long before invented it, demonſtrated its uſe, and ſhewn a ready way of conſtructing it, by enlarging the meridian line by a continued addition of ſecants; but neither of theſe gentlemen is thought the original author of it, as being hinted by Ptolemy about two thouſand years ago.

MERCHANT, one who buys and ſells commodities in groſs, or deals in exchanges; or that traffics in the way of commerce, either by importation or exportation. Formerly every one who was a buyer or ſeller in the retail way, was called a merchant, as they are ſtill both in France and Holland; but here that appellation is given only to thoſe who export and import.

MERCURIAL, conſiſting of, or relating to mercury.

MERCURIFICATION, in chemiſtry, the method of ſeparating the mercuries of metals, which is moſt eaſily effected by means of a burning-glaſs; for the metal being placed in its focus, its mercurial parts are ſaid to fly off in ſmoke, which when condenſed and collected, appears to be true quickſilver.

MERCURY, in natural hiſtory, a fluid metallic ſubſtance, not moiſtening the hands; perfectly opake; of a bright ſilver colour, reſembling lead or tin when melted; entirely void of taſte and ſmell; extremely diviſible; not congealable in the greateſt degree of natural cold. It is the moſt ponderous of all fluids, and of all known bodies except gold and platina: its gravity is to that of water nearly as 14 to 1; a cubic foot of quickſilver weighing 947 pounds, whilſt a cubic foot of water weighs but 70: it is found to be heavier in winter than in ſummer, in the proportion of eleven ounces thirty-two grains, to eleven ounces ſeven grains. In conſequence of its great denſity, it is of all fluids the coldeſt to the touch: the hand cannot be kept one quarter of an hour in a quantity of quickſilver with ſafety. Of all fluids likewiſe it grows hotteſt, not really, but apparently, from the application of an equal external heat. In a heat below ignition, it totally exhales in extremely thin, ſubtile, penetrating fumes, which condenſe into running mercury again: the admiſſion of air, which changes the fumes of the other ſemi-metals into a powdery calx, has not that effect upon thoſe of quick-ſilver. It diſſolves in all the mineral acids, but with different degrees of facility; and proves itſelf a menſtruum for ſundry metallic bodies. It has the greateſt affinity with gold; adhering to and diſſolving that metal the moſt readily of all. It unites eaſily alſo with ſilver; leſs eaſily with lead; ſtill leſs ſo with tin; very difficultly with copper; moſt of all with iron, to which it ſeems to have an inſuperable repugnance. There are different methods of purifying quickſilver; as ſtraining through leather; trituration or ablution with vinegar; with vinegar and ſalt, with ſope-leys, with rectified ſpirit of wine, and with aqua-fortis; and diſtillation, either without addition, or with alkaline ſalts, quick-lime, or iron-filings.

The largeſt quantities of mercury are employed for metallurgical operations: gold and ſilver are extracted, in the Spaniſh Weſt Indies, from their ores or matrices, by amalgamation with mercury; and both metals are recovered by the ſame means, when blended in minute particles with earthy matters, as in filing, or working them. Amalgamated with tin, it makes the foil for looking-glaſſes, and reflecting balls. It is uſed alſo for gilding on ſilver, for anatomical injections, for weather glaſſes, and ſundry other purpoſes. In vacuo it appears luminous, and is then called the mercurial phoſphorus.

Quickſilver, as a medicine, is a ſpecific againſt the venereal diſeaſe, worms, lice, and all kinds of inſects: the venereal diſtemper is not perhaps to be radically cured without it, but againſt inſects there are other remedies equally if not more effectual. It is commonly ſuppoſed to have, of itſelf, no poiſonous quality; but it appears, from experience, manifeſtly prejudicial to the nerves and the bones. Its ill effects are moſt obſervable in thoſe who are expoſed to its fumes; which fumes are no other than perfect quickſilver, as any one may be convinced by receiving them on a piece of moiſt leather or cloth, upon which they will reunite into little globules of mercury. Moſt people admit a pernicious quality in the fumes, though they deny it to the quickſilver; not conſidering that the fumes are only the quickſilver itſelf, divided but not altered by the heat. Even mercurial ointments applied externally have occaſioned contractions of the limbs, corroſions of the bones, and other dangerous conſequences. How ſoon do the miners feel its ill effects, though they neither anoint with it, nor ſwallow it, nor are expoſed to the fumes into which it is reſolved by fire! They firſt become paralytic, and fall afterwards into a ſalivation: their teeth drop out: violent pains in the whole body, particularly in the bones, and at length death ſucceed. It may be proper to obſerve, that the Spaniſh phyſicians treat theſe patients in a different method from that purſued among us and in other countries: they expoſe them frequently for a conſiderable length of time to the open air, and give internally nothing but abſorbents

Mercurius dulcis, is ſublimate made mild, by combining with it ſo much freſh mercury, as is ſufficient to ſatiate the redundant acid. Four parts of powdered ſublimate are ground with three of quickſilver, an operation in which great caution is neceſſary, to avoid the lighter corroſive particles that fly off, till they are thoroughly incorporated; or, which is much more commodious, digeſted together in a gentle heat, by which the union will be performed as effectually. The mixture is then ſublimed in a glaſs matraſs or phial; the ſublimed maſs freed from the whitiſh acrid matter about the mouth of the veſſel, and from ſuch mercurial globules as may happen to appear diſtinct, then pulveriſed, and ſublimed again: in this manner the ſublimation is repeated ſix times, by which means the medicine becomes leſs liable to irritate the firſt paſſages, and run off by ſtool. Mercurius dulcis ſeems to be the beſt and ſafeſt of the mercurial preparations that can be taken in a ſolid form. It may be given from fifteen to twenty grains; or, as an alterative, from one to two or three grains.

MERCURY ☿, in aſtronomy, the ſmalleſt of the inferior planets, and the neareſt to the ſun. See *Planet*. According to Mr. Caſſini, the greateſt diſtance of Mercury from the earth is 32704, the mean diſtance 22000, and the leaſt diſtance 11296 ſemi-diameters of the earth: therefore his mean diſtance will be about 88,000000 Engliſh miles; and the diameter of Mercury is three-fourths of the diameter of the earth, and therefore the globe of Mercury muſt be two-fifths of that of the earth. Mr. Azout pretends to prove, that though Mercury be ſo near the ſun, the light there is not capable of burning any objects. But Sir Iſaac Newton makes the heat of Mercury ſo great, as to be ſeven times as much as the heat of our ſummer ſun; which he found, by experiments deſignedly made by the thermometer, is enough to make water boil. And therefore, if bodies will not be there enkindled by ſuch a degree of heat, it muſt be becauſe their degree of denſity is proportionably greater than that of ſuch kinds of bodies on our earth: wherefore this fiery planet is certainly uninhabitable by ſuch creatures as live on our earth. Dr. Halley, in his obſervation of Mercury ſeen in the ſun, in the year 1677, at St. Helena, ſays, that this planet may be ſeen nine times in the ſun, near the aſcending node, in the years 1710, 1723, 1736, 1743, 1756, 1769, 1776, 1782, 1789, in October: and four times near the other node, in the month of April, in the years 1707, 1753, 1786, 1799; all within this century.

MERCURY, in heraldry, a term uſed in blazoning by planets, for the purple colour in the arms of ſovereign princes. See *Blazoning*.

MERCURY, in matters of literature, denotes a book, or other paper, chiefly filled with news; ſo called from the Pagan deity Mercury, who is ſaid to have been the meſſenger of the gods.

* MERCURY, in pagan worſhip, the ſon of Jupiter and Maia, the daughter of Atlas, was born on mount Cylene, in Arcadia, and was ſuckled by Juno. He early diſplayed his talent for theft, for being careſſed by Vulcan, he ſtole away his tools; he alſo took away Jupiter's ſcepter, and would have taken his thunder-bolts, had they not burnt his fingers. Mercury was alſo the tutelary god of roads and croſs-ways, and though he was a thief, was the guardian of trade and commerce. He was the protector of learning, and the arbiter of all quarrels among the gods: but his moſt remarkable office was to attend dying men, and conduct their ſouls to the infernal regions. Some of his moſt remarkable actions are, his killing Argus; his ſtealing Apollo's oxen, and metamorphoſing Battus into a touch-ſtone. He had Hermaphroditus by Venus, and ſeveral other children by different women. He delivered the god Mars from priſon, and faſtened Prometheus on mount Caucaſus.

He is deſcribed by the poets as a fair beardleſs youth, with flaxen hair, lively blue eyes, and a ſmiling countenance. He has wings fixed to his cap and ſandals, and holds the caduceus (or ſtaff ſurrounded with ſerpents with two wings on the top) in his hand, and is frequently repreſented with a purſe, to ſhow that he was the god of gain. The animals ſacred to him were, the dog, the goat, and the cock.

MERIDIAN, in aſtronomy, a great circle of the ſphere, paſſing through the zenith, nadir, and poles of the world; dividing the ſphere into two hemiſpheres, the eaſtern and weſtern. It is a vertical circle paſſing through the poles of the world.

To draw a MERIDIAN *Line*. On an horizontal plane, (plate XXXIII. fig. 1.) from the center C, deſcribe ſeveral concentric arches B A, *b a*, &c. and on the ſame center C, erect a ſtyle or gnomon, perpendicular to the plane A C B, a foot or half a foot long. About the time of the tropics before noon, between the hours of nine and eleven in the morning, and between one and three in the afternoon, obſerve the points B *b*, &c. A *a*, wherein the ſhadow of the ſtyle terminates. Biſect the arches A B, *a b*, &c. in D, *d*, &c. If then the right line D E biſect all the arches A B, *a b*, &c. it will be the meridian line ſought. As the extremity of the ſhadow is ſomewhat hard to determine, it will be convenient to have the ſtyle flat at the top, and to drill a little hole, noting the lucid ſpot projected by it, on the arches A B and *a b*, inſtead of the extremity of the ſhadow.

Hence, if the meridian line be biſected by a right line O V, drawn perpendicularly through the point C, O V will be the interſection of the meridian, and firſt vertical, and conſequently O will ſhew the eaſt point, and V the weſt.

MERIDIAN LINE, on a dial, is a right line ariſing from the interſection of the meridian of the place, with the plane of the dial; this is the line of twelve o'clock, and from hence the diviſion of the hour-lines begins. See *Dial*.

Magnetical MERIDIAN, a great circle paſſing through the magnetical poles, to which the magnetic needle, or needle of the mariner's compaſs conforms itſelf.

MERIDIAN *Altitude of the Sun or Stars*. Their altitude when in the meridian of the place where they are obſerved. Or it may be defined, an arch of a great circle perpendicular to the horizon, and comprehended between the horizon and the ſun or ſtar then in the meridian of the place.

To take the MERIDIAN *Altitude with a Quadrant*. If the poſition of the meridian be known, and the plane of an aſtronomical quadrant be placed in the meridian line, by means of the plumb-line ſuſpended at the center, the meridian altitudes of the ſtars, which are the principal obſervations whereon the whole art of aſtronomy is founded, may eaſily be determined. The meridian altitude of a ſtar may likewiſe be had by means of a pendulum clock, if the exact time of the ſtar's paſſage by the meridian be known. Now it muſt be obſerved, that ſtars have the ſame altitude for the minute before and after their paſſage by the meridian, if they be not in or near the zenith; but if they be, their altitudes muſt be taken every minute when they are near the meridian, and their greateſt altitude will be the meridian altitudes ſought. See the article *Quadrant*.

MERIDIONAL DISTANCE, in navigation, the ſame with the departure, eaſting, or weſting, or the difference of longitude between the meridian under which the ſhip now is, and any other meridian ſhe was before under.

MERIDIONAL PARTS, MILES, or MINUTES, in navigation, are the parts by which the meridians in Mr. Wright's chart, commonly, though falſely, called Mercator's, do increaſe, as the parallels of latitude decreaſe.

* MERIONETHSHIRE, a county in North Wales, bounded by Carnarvonſhire and Denbighſhire on the north, by Montgomeryſhire on the ſouth-eaſt, and by the Iriſh ſea on the weſt. It is watered with the rivers Dee, the Douay, the Druryd, the Farles, and Llanbeder. It is exceedingly mountainous and rocky, and conſequently unpleaſant, rough, and unfruitful; however, it has paſture proper for feeding ſheep and cattle, by which the inhabitants are chiefly maintained; beſides which there are red deer, fowl, and fiſh, eſpecially herrings. It is about thirty-five miles in length, and twenty in breadth, with about thirty-ſeven pariſhes. The market towns are Harlech, Dolgelhe, and Bala.

MERIT, in theology, ſignifies deſert. This term is more particularly uſed to ſignify the moral goodneſs of the actions of men, and the rewards to which thoſe actions entitle them.

MERLIN, *Æſalon*, in ornithology, the leaſt of the hawk kind, but much reſembling the haggard-falcon.

MERLON, in fortification, is that part of a parapet which is terminated by two embraſures of a battery.

* MEROPE, in fabulous hiſtory, daughter of Atlas and Pleione, and one of the Pleiades. She rendered a more obſcure light than the reſt, becauſe ſhe was married to a mortal, named Siſiphus, but her ſiſters were married to gods.

MEROPS, the bee-eater, in ornithology, the blue-breaſted iſpida, with a variegated head; a very beautiful bird, ſomewhat larger than the common kingfiſher.

MERULA, the blackbird, in ornithology, a ſpecies of the turdus, or thruſh kind.

MESENTERY, in anatomy, a thick fat membrane, placed in the midſt of the inteſtines, particularly of the ſmaller ones, whence it has the name.

MESOCOLON, in anatomy, that part of the myſentery connected with the great guts, eſpecially the colon.

MESPILUS, the medlar, in botany, a genus of plants, the flower of which is made up of roundiſh hollow petals; and its fruit is an umbilicated globoſe berry, containing five oſſeous and gibbous ſeeds.

MESSENGERS, certain officers chiefly employed under the direction of the ſecretaries of ſtate, who always are in readineſs to be ſent with all kinds of diſpatches foreign and domeſtic. They alſo, by virtue of the ſecretaries warrants, take up perſons for high treaſon, or other offences againſt the ſtate.

MESSIAH, the annointed; a title which the Jews gave to their expected great deliverer, whoſe coming they ſtill wait for: and a name the Chriſtians apply to Jeſus Chriſt, in whom the prophecies relating to the Meſſiah were accompliſhed. Among the Jews, anointing was the ceremony of conſecrating perſons to the higheſt offices and dignities; kings, prieſts, and ſometimes prophets were anointed: thus Aaron and his ſons received the ſacerdotal, Eliſha the prophetic, and David, Solomon, and others, the royal unction.

* MESSINA, a large city of Sicily. It is rich, and well fortified, carrying on a great trade. It is at preſent about five miles in circumference, and has about ſixty thouſand inhabitants. It was formerly a free port, and has many magazines of merchandize. It has an harbour in the form of an half Moon, and one of the beſt in the whole mediterranean, being five miles in circumference, and extremely deep, and the quay belonging to it is above a mile in length, the public buildings and religious houſes are very numerous and magnificent. It is defended by a ſtrong caſtle and other forts, and it exports ſilk, oil, and fruits; beſides which it has great plenty of corn, and excellent wine. Meſſina ſubmitted to the Spaniards in 1719; but the emperor retook it in 1720; in 1735 the Spaniards got poſſeſſion of it again, and in 1740 allowed the Turks to have a conſul there of their own nation. The archbiſhop has a very great revenue. It is one hundred and ten miles eaſt of Palermo. Long. 15. 39. E. Lat. 38. 41. N.

METAL. See METALLIC *Bodies*.

Prince's METAL, called *Bath* METAL, a kind of factitious metal, of a beautiful yellow, and diſpoſed to receive a fine poliſh, luſtre, &c. It is prepared, according to Dr. Shaw, as follows: take ſix ounces of copper, melting it in a wind furnace; add to it one ounce of zink: then ſtirring the whole well together, pour out the metal immediately. The copper and zink may be put into the crucible together, if firſt covered over with the black flux, which prevents the evolution of the zink, or preſerves its metalline form.

METAL, in heraldry. There are two metals uſed in heraldry, by way of colours, viz. gold and ſilver, in blazonry called *or* and *argent*.

In the common paintings of arms theſe metals are repreſented by white and yellow, which are the natural colours of thoſe metals. In engraving, gold is expreſſed by dotting the coat, &c. all over; and ſilver, by leaving it quite blank.

METALLIC *Bodies*, in natural hiſtory, ſuch metals as are capable of being worked and conſiderably extended under the hammer; and ſemi-metals, thoſe which want that valuable quality.

METALLURGY, *Metallurgia*, according to Booerhave, the whole art of preparing and working metals from the glebe, or ore, to the utenſil; in which ſenſe, mineralogy, aſſaying, ſmelting, refining, ſmithery, gilding, &c. are only branches of metallurgy. See MINERALOGY, &c.

Dr. Shaw however reſtrains metallurgy to thoſe operations required to ſeparate metals from their ores, for the uſes of life. Theſe operations are of two kinds, or ſmaller and large; with regard to which the whole art of metallurgy may be divided into two parts, aſſaying and ſmelting. See ASSAYING, &c.

Semi-METALS, metallic foſſils, fuſible by fire, and not malleable in their pureſt ſtate.

METAMORPHISIS, in general, denotes the changing of ſomething into a different form; in which ſenſe it includes the transformation of inſects, as well as the mythological changes related by the ancient poets. Mythological metamorphoſes were held to be of two kinds, apparent and real: thus, that of Jupiter into a bull, was only apparent; whereas that of Lycaon into a wolf, was ſuppoſed to be real.

METAPHOR, *Metaphora*, in rhetoric, a figure of ſpeech, whereby the proper denomination of one thing is applied to another, for the greater elegance of expreſſion.

A metaphor is a ſimile or compariſon intended to illuſtrate the thing ſpoken of, without the form of compariſon. If any author is obliged to give a large account of things, plain and of common obſervation, he muſt raiſe and ennoble them by ſtrong and graceful metaphors. This rule Tully has obſerved in his deſcription of the ſeveral parts of this habitable globe, in his book on the Nature of the Gods. So has Virgil, in his Georgics, where he has made his meaneſt and coarſeſt ſubjects fine and admirable, by his judicious uſe of metaphors; in his perfect lines, the little affairs of ſhepherds and farmers appear with dignity; his deſcriptions make the country a paradiſe, and his touches, as a noble writer expreſſes it, turns every thing into gold. Thoſe are admirable and beautiful metaphors, in which the properties of rational creatures are applied to animals, and thoſe of animals to plants and trees; this way of treating a ſubject gives life and beauty to the whole creation. But we receive the ſtrongeſt pleaſure from thoſe bold and comprehenſive metaphors, in which, beſides the illuſtration of the ſubject they are intended to raiſe and improve, convey to us a freſh and lively image.

METAPHYSICS, *Metaphyſic*, *Tranſnaturals*, or *Ontology*, a ſcience that treats of being, as ſuch, in the abſtract, or in general, not reſtrained to this or that ſpecies of it.

If we are ſhort-ſighted, in phyſical matters, which are nearer our ſenſe, and, in a manner, expoſed to our view, how much more muſt we be bewildered in our ſearch after ſpiritual abſtracted truths, in the conſideration of univerſals? This ſcience proceeds in almoſt unknown paths, containing very few doctrines of allowed certainty, few principles in which men are univerſally agreed, ſcarce any juſt definition, any exact diviſion, and, conſequently, affords large matter for doubts and diſputes. Add to this the barbarous terms and perplexed reaſonings with which the ſchools have embarraſſed this ſcience. We ought by no means to approve of the deſign and notion of ſome contemplative men, who would introduce too great a mixture of metaphyſics into the ſubjects of religion, which ought to be treated with the moſt familiar plainneſs of method.

METAPLASMUS, in grammar, a tranſmutation or change made in a word, by adding, retrenching, or altering a letter, or ſyllables thereof.

METATARSUS, in anatomy, a fleſhy maſs lying under the ſole of the foot.

METATHESIS, in grammar, a ſpecies of the metaplaſmus; being a figure whereby the letters or ſyllables of a word are tranſpoſed, or ſhifted out of their uſual ſituation, as piitris for priſtis; Lybia for Libya, &c.

METEMPYSCHOSIS, the doctrine of tranſmigration, which ſuppoſes that human ſouls, upon their leaving the body, become the ſouls of ſuch kind of brutes as they moſt reſemble in their manners. This was the doctrine of Pythagoras and his followers, who held that the ſouls of vicious men were impriſoned in the bodies of miſerable beaſts, there to do penace for ſeveral ages, at the expiration of which they returned again to animate men; but if they had lived virtuous, ſome happier brute, or even a human creature, was to be their lot.

METEOR, in phyſiology, an imperfect, changeable, and mixt body, or the reſemblance of a body appearing in the atmoſphere, and formed by the action of the heavenly bodies, out of the common elements. Meteors are of three kinds, fiery, airy, and watery. Fiery meteors conſiſt of a fat ſulphureous ſmoke ſet on fire; ſuch as lightning, thunder, falling ſtars, draco volans, the ignis fatuus, and other phænomena appearing in the air. Airy meteors conſiſt of flatulent and ſpirituous exhalations, ſuch as winds, &c. Watery meteors are compoſed of vapours or watery particles, variouſly modified by heat and cold, ſuch as clouds, rain, hail, ſnow and dew.

METHEGLIN, a ſort of drink prepared from water and honey. The beſt way of making it is as follows: Put as much new honey, naturally running from the comb, into ſpring-water, as that, when the honey is thoroughly diſſolved, an egg will not ſink to the bottom, but be juſt ſuſpended in it. Then boil the liquor for an hour or more, till the egg ſwims above the liquor; then take it off the fire, and let it cool. When very cool, next morning, it may be barrelled up; and adding to it half an ounce of ginger, as much of cloves, as much of mace, and a quarter of an ounce of cinnamon, all groſly pounded, a ſpoonful of yeaſt may be added alſo at the bung to increaſe its fermentation. When it has done working, it may be cloſely ſtopped up, and after it has ſtood a month it may be drawn off into bottles.

METHOD, *methodus*, the art of diſpoſing things in ſuch a manner, as they may be eaſily comprehended, either to diſcover the truth which we ourſelves are ignorant of, or to demonſtrate it to others, when known.

Method, with regard to the order of procedure, is uſually divided into the method of reſolution, or analytic method, whereby we proceed from ſome general known truth to others which belong to ſome particular thing; and into the method of compoſition, or ſynthetic method, in which we propoſe ſome certain general truths, from which we produce particular truths.

If, in the method of reſolution, we lay down any axioms, it is not immediately in the beginning, but as they are found neceſſary in the diſquiſition; but the caſe is otherwiſe in the method of compoſition.

In both theſe methods, no propoſition ſhould be admitted as true, which is not evident. 2. That the connection of the following propoſition with the foregoing be likewiſe evident in every ſtep.

The laws of the ſynthetic method will be beſt drawn from mathematicians, as 1. To offer nothing but what is couched in terms perfectly underſtood. 2. To build only on clear principles. 3. To prove demonſtratively all their conſequences, namely, by definitions that have been laid down, axioms that have been granted, and propoſitions that have been already proved; which become principles to things that follow them.

Method, in mathematics, more peculiarly denotes certain particular proceſſes for ſolving problems.

* METHODISTS, a religious ſect, who firſt made their appearance in the year 1740. By the death of Mr. Whitefield, Methodiſm is ſuppoſed to be on the decline.

METONIC Cycle, in chronology, the ſame with the cycle of the moon.

METONOMY, in rhetoric, a trope in which one name is put for another, on account of the near relation there is between them. By this trope any of the moſt ſignificant circumſtances of a thing are put for the thing itſelf.

METOPOSCOPY, the pretended art of knowing a perſon's diſpoſitions and manners, by viewing the traces and lines in the face.

METRE, *Meter*, *Metrum*, in poetry, denotes a ſyſtem of feet of a proper length.

METROPOLIS, the capital of a country or province. It alſo denotes an archiepiſcopal church.

MEUM, ſpignel, in botany, an umbelliferous perennial plant, which grows wild in meadows in ſome parts of England

land, and flowers in June. The root of this plant is recommended as a carminative, ſtomachic, and for attenuating viſcid humours, appearing to be nearly of the ſame nature with that of lovage; differing in its ſmell, being rather more agreeable, ſomewhat like that of parſnips, but ſtronger, and in its taſte being leſs ſweet, and more warm or acrid.

MEWING, the falling off, or change of hair, feathers, ſkin, horns, or other parts of animals, which happens in ſome annually, in others only at certain ſtages of their lives; but the generality of beaſts mew in the ſpring.

* MEXICO, or NEW-SPAIN, a large country of North America, ſubject to the king of Mexico before it was conquered by the famous Cortez. It is bounded on the north by New Mexico; on the eaſt by the gulph of Mexico and the North Sea; and on the ſouth and weſt by South America, and the South Sea. It is above a thouſand miles in length, and is under a viceroy, who is a grandee of Spain, and reſides at Mexico, and is changed every five years. It is divided in twenty-three provinces, Mexico being the principal. It contains mines of gold, ſilver, and other minerals, and is an exceeding good country, whereof Mexico is the capital. It is generally mountainous. The higheſt mountains are near the coaſt of the South Sea, and many of them are volcanos. The eaſtern ſhore is a flat level country, abounding in bogs and moraſſes, and overflowed in the rainy ſeaſon; but is ſo covered with thickets of bamboo cane, mangroves, and buſhes, that the logwood cutters are forced to make their way through it with their hatchets. The hills between the mountains and the flat country are beſt inhabited, and there the air is moſt temperate. Within the tropic of Cancer they have annual periodical rains, and when the ſun is directly over their heads, it is then their cooleſt ſeaſon, becauſe the ſun is obſcured by clouds, and the flat country is under water. Their fair weather is when the ſun is in the ſouthern ſigns, at the greateſt diſtance from them. The ſprings and rivers are very low in March, April, and in the beginning of May; then the country affords neither graſs nor herbage, unleſs it is watered; but the trees are always green, and there is fruit almoſt all the year round. Theſe are the cocoa-trees, of which they make chocolate, vanellas, plantains, pine-apples, cocoa-nuts, ſapadillos, avagato pears, guavas, prickle pears, oranges and lemons, with a great variety of gums and drugs. Their foreſt-trees are a ſort of cedar, logwood, maachenen, and many others, whoſe names are not well determined, ſo as to be underſtood by people who have never been there. There were before the arrival of the Spaniards, neither horſes, oxen, camels, elephants, rhinoceroſſes lions ſheep, hogs, goats, aſſes, or dogs, except ſome little ones that could not bark; but they had tygers, bears, elks, picarees, warrees, beavers, opoſſums, armadillos, guanoes, flying ſquirrels, different ſorts of monkeys, ſnakes, and a variety of birds and inſects, among which the cochineal is moſt valuable. The preſent inhabitants of Mexico are native Americans, Spaniards, Creoles, Meſtees, that is a mixture between a Spaniard and an American, Negroes, and Mulattoes.

The ancient Mexicans worſhipped one ſupreme god, the planets, and departed heroes, and the Spaniards pretend that they ſacrificed men. But now the preſent inhabitants are all obliged to profeſs popery, unleſs they have a mind to be put into the inquiſition. The number of the Spaniſh clergy is very great, and there are many monks and nuns.

* MEXICO, a large city of North America, the capital of New Spain, is ſeated in Proper Mexico. This was a very large place before the Spaniards entered into the country. It contained about eighty thouſand houſes, ſeveral magnificent temples, full of rich idols, and there were three handſome palaces where the emperor of Mexico reſided. This place was beſieged by Hernando Cortez, with nine hundred Spaniſh foot, eighty horſe, and two hundred thouſand Americans, which his allies had ſupplied him with. This ſiege was begun in 1521, and laſted three months, in which time the city was quite ruined. Cortez cauſed it to be rebuilt, and there is now about thirty thouſand houſes, which are all of brick or ſtone, and the Americans are driven into a ſuburb, which contains about three thouſand houſes. It is a handſome city, and the ſtreets are ſtrait, broad, and clean, with magnificent ſtructures, palaces, churches, and convents for both ſexes. It is alſo rich in trade. The viceroy of New Spain commonly reſides here, and it is a royal audience, a tribunal of the inquiſition, an archbiſhoprick, and an univerſity, with the power of coining money. It is 200

Miles from Vera Cruz. Long 103. 12 W. Lat. 20. 15. N.

MEZERION, or Mesereum, ſpurge-olive, a ſpecies of thymelæa, which agrees in virtue with the ſpurge-laurel.

MEZZOTINTO, a particular manner of repreſenting figures on copper, ſo as to form prints in imitation of painting in Indian ink. The ſcraping mezzotintos is a kind of engraving, executed by covering the ſurface of a copper-plate with lines, ſunk in it cloſe to each other, in different directions; ſo that it would, if uſed for printing in this ſtate, give a black impreſſion, or ground, from the whole: and then taking away or diminiſhing the effect of the ground, by ſcraping or burniſhing, according to the neceſſary expreſſion of any given deſign, ſuch parts of theſe lines as brings the plate to the ſame condition, as if lines had been originally cut, correſpondently to the manner of other engravings, in thoſe places where they were wanted to expreſs the ſhades or darker parts of the deſign. This appears, therefore, in one view, to be an oppoſite kind of engraving to the others; as in them the ſhades and darker parts are formed by the deſtroying part of the lights, of which the whole ground muſt be conſidered as at firſt conſiſting; whereas in this, the ground being originally all ſhade, the lights are produced by deſtroying the neceſſary parts of thoſe ſhades. Not only the facility of the work, but the effect of it when finely executed, are great recommendations to this kind of engraving; as the extreme ſoftneſs of the teints, along with a great force of relief, renders the prints, done this way, that are perfect, more generally pleaſing than thoſe engraved in any other manner; which the great number of portraits lately done evinces. It is, however, only with regard to ſome kind of ſubjects, that this ſpecies of engraving has this merit; portraiture is the great object of its excellence; and ſome landſcapes have been done that are not contemptible; horſes alſo have been attempted with ſucceſs; and ſome deſigns of hiſtory, properly adapted, may be brought within its reach. But where any thing beſides the portraits of men, and other animals, come in queſtion, there muſt be a peculiar accommodation of the ſubject; as its powers, with reſpect to variety of expreſſion, are much leſs extenſive than thoſe of etching; and conſequently fall far ſhort of thoſe of the graver. The principles, on which the fitneſs or unfitneſs of ſubjects for this kind of engraving are founded, are of two kinds, the one reſpecting the proportion of light and ſhade; the other, the nature of the deſign with regard to the outline. Such pieces as contain large and clear maſſes of light, do not ſucceed at all: but where, on the contrary, there is a large proportion of very dark parts, as in the repreſentations of night ſcenes, or a large proportion of brown ſhades, as in the pictures of Rembrandt, Benedette, and Teniers, in ſome inſtances, the beſt effect is produced, and with the leaſt labour. Such pieces likewiſe, as are of a ſimple compoſition, and do not require great force, and variety of expreſſion, as paſſion and character, are ſuitable; but where great ſpirit and freedom are required to give merit, this manner of engraving fails; as it does not admit of thoſe ſharp and delicate ſtrokes and touches, which are the means of that expreſſion.

Painting Mezzotinto *on Glaſs.*—The painting on glaſs by means of mezzotinto prints is performed by cementing the printed ſide of the prints to the ſurface of the glaſs by the aſſiſtance of ſome glutinous body which will not diſſolve in water; and then deſtroying the texture of the paper by water, ſo that it may be rubbed entirely off from the cement upon the glaſs, in the ſame manner as if the original impreſſion had been made there; by which method a complete drawing of the picture deſigned is obtained on the glaſs; and may be coloured by either oil, varniſh, or water colours. The method of performing it is as follows:

Procure a piece of the beſt crown glaſs as near as poſſible in ſize to the print to be taken off; and varniſh it thinly over with turpentine, rendered a little more fluid by the addition of oil of turpentine. Then lay the print on the glaſs, beginning at one end, and preſſing it gently down in every part to the other. In order to prevent any veſicles of air being formed, during the operation of laying it on, by the paper touching the cement unequally in different parts, and to ſettle the whole more cloſely to the glaſs, it will not be improper to paſs a wooden roller of about two inches diameter, well turned and very ſmooth, over it. This being done, let the glaſs, with the print cemented on it, be gently dried, till the turpentine be perfectly hard: then let the print be thoroughly moiſtened with water; and while it continues wet rub off the paper, by rolling it under the finger, till only a thin film remains. When it is

Fig. 1. Meridian.

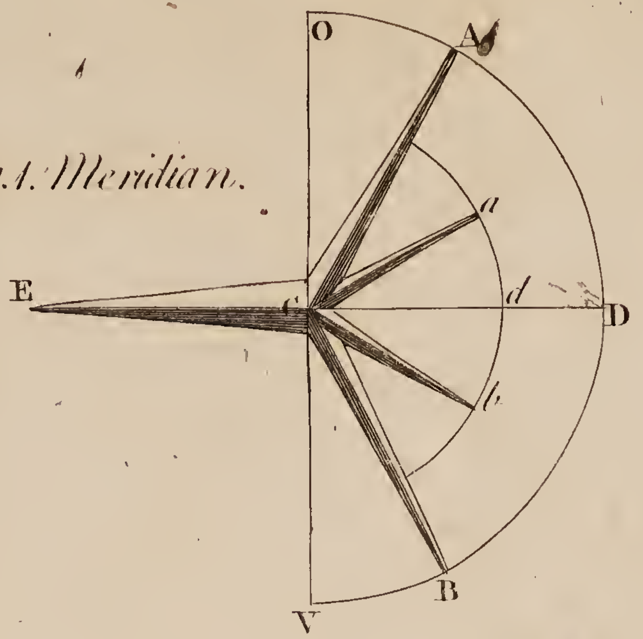


Fig. 2. Microscope.

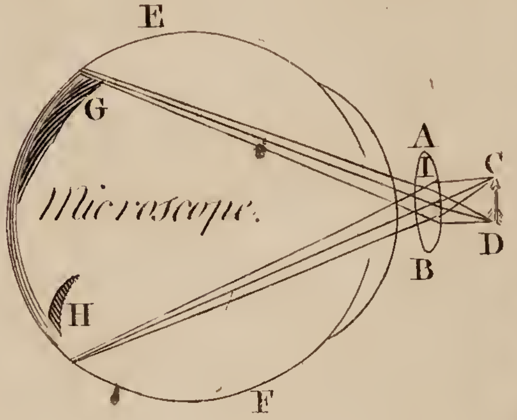


Fig. 4.

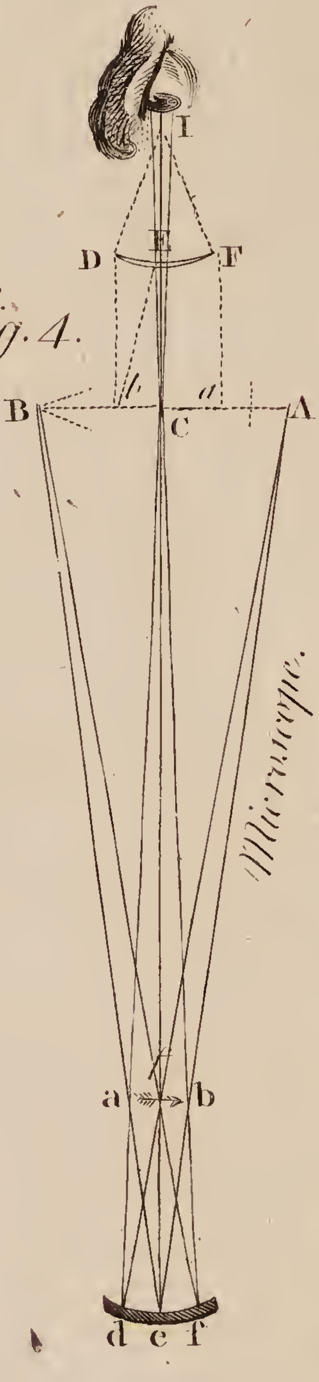


Fig. 5. Microscope.

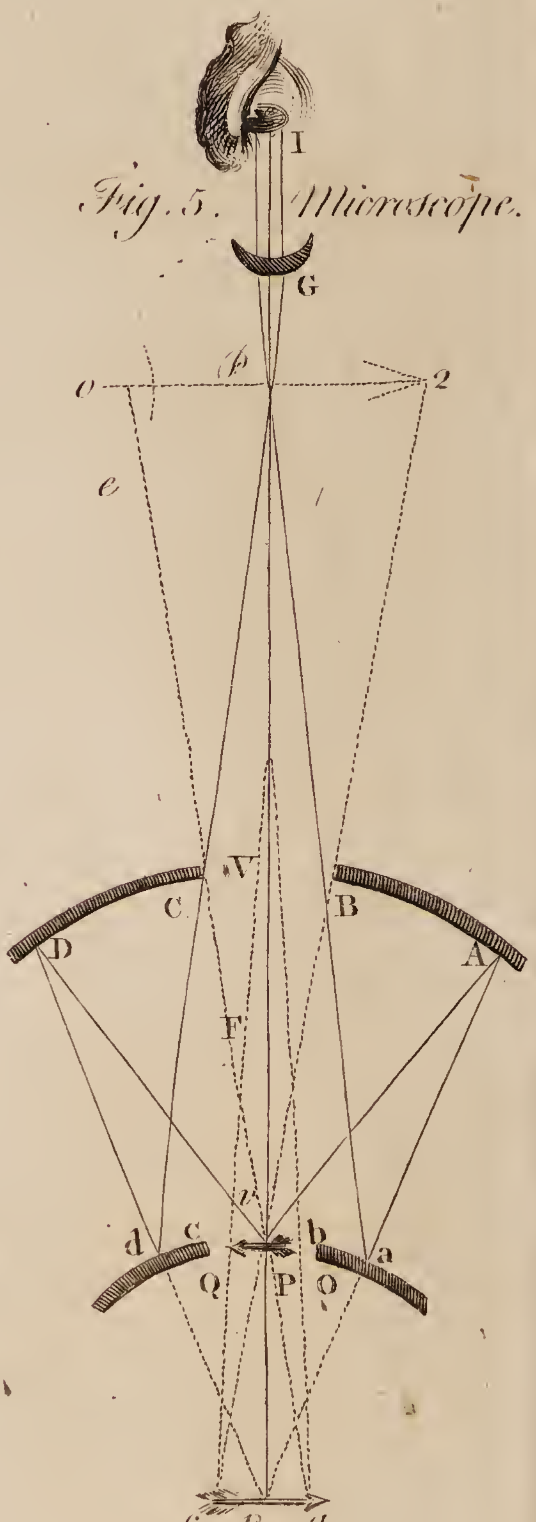
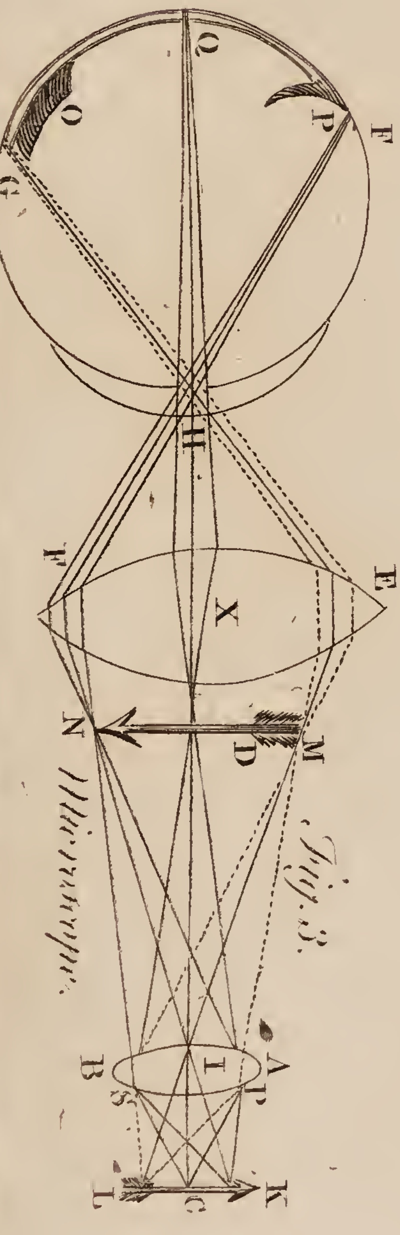


Fig. 3. Microscope.



dry, varniſh it over with oil of turpentine, and you may proceed to paint it either with oil, varniſh, or water colours; and the piece, if well executed, will appear on the fore ſide to be elegantly painted on the glaſs

MIASMA, among phyſicians, denotes ſuch particles as are ſuppoſed to ariſe from diſtempered, putrifying, or poiſonous bodies.

MICHAELMAS, or *Feaſt of St Michael and all Angels*, a feſtival of the chriſtian church, obſerved on the 29th of September.

MICROCOSM, a term chiefly applied to man, who is called the little world, by way of eminence, as being an epitome of all that is wonderful in the great world, or macrocoſm.

MICROGRAPHY, *micrographia*, a deſcription of the parts and proportions of objects that are too ſmall to be viewed without the aſſiſtance of a microſcope.

MICROMETER, an aſtronomical machine, which by means of a ſcrew, meaſures extremely ſmall diſtances in the heavens, &c. to a great degree of accuracy In ſome micrometers, an inch is divided into 2800 parts, and in others more.

Notwithſtanding the invention of the micrometer is aſcribed to M. Huygens, Auzout and Picard, the two latter having publiſhed one in 1666, yet Mr. Townley, in the Philoſophical Tranſactions, reclaims it for one of our countrimen, Mr. Gaſcoyne. He relates that, from ſome papers of this gentleman's, he learned, that, before our civil wars, he had invented a micrometer, and had made uſe of it for ſome years, in taking the diameter of the planets, diſtances upon land, the moon's diſtance, &c

MICROSCOPE, an optical inſtrument, whereby very minute objects are repreſented extremely large and diſtinct, according to the laws of refraction.

Microſcopes are of two kinds, ſimple and compound The firſt ſort conſiſts of one glaſs; the other of two or more. The ſimple microſcope is no other than a convex lens, through which objects appear magnified.

An object ſeen through this microſcope appears magnified nearly in that proportion, which the diſtance, at which an object would be ſeen diſtinctly with the naked eye, bears to the focal diſtance of the microſcope. Thus, let A B (plate XXXIII *fig.* 2) repreſent the microſcope, C D an object placed at the focal diſtance of parallel rays, or ſomething nearer, that the rays of the ſame pencil may be parallel to each other, or rather diverging in a ſmall degree, when they enter the eye, this circumſtance being requiſite to diſtinct viſion; and let the microſcope be ſo ſmall, that all the rays that paſs through it from the object may enter the pupil of the eye E F at the ſame time, when placed cloſe to it, as in the figure; for unleſs it be ſo ſmall, it will ſcarce magnify ſufficiently to deſerve the name of microſcope Things being thus expoſed, the angle under which this object appears will be G I H, or C I D, but this is nearly the ſame it would have appeared under, had there been no microſcope interpoſed; notwithſtanding which, the object is properly enough ſaid to appear magnified by this microſcope, becauſe, without that, it could not have been ſeen diſtinctly at ſo ſmall a diſtance from the eye, but muſt have been ſituated eight or ten inches from it; and therefore, ſince objects appear under a larger angle, the nearer they are to the naked eye, this object appears larger, or is magnified by means of the microſcope, in proportion as it is ſeen diſtinctly at a leſs diſtance with it than without it; that is, nearly as the focal diſtance of the microſcope is to that at which objects are ſeen diſtinctly with the naked eye.

An object will alſo appear diſtinct, though it be ſituated at a very ſmall diſtance from the eye, by being viewed through a ſmall hole in a piece of paper; but then this hole muſt be made ſo very ſmall, that, unleſs the object be ſtrongly illuminated, it will appear very obſcurely through it.

The form of a compound microſcope is expreſſed in *fig.* 3. where A B repreſents a ſmall convex lens, whoſe focal diſtance is ſuch, that rays flowing from the point C may be collected in D; and E F is a large lens, whoſe focus of parallel rays coincides with the point D; and F G repreſents an eye ſo ſituated, that rays proceeding from an object at K L may enter the pupil of it, after having paſſed through both glaſſes. Theſe things being diſpoſed in this manner, the object K L will appear magnified, and alſo diſtinct.

For, firſt, let R C S repreſent a pencil of rays flowing from the point C, theſe will meet their axis again in the point D by ſuppoſition, and, croſſing there, will enter the lens E F diverging from its focus of parallel rays, and will therefore enter the pupil of the eye in directions parallel to each other, and concur upon the retina at Q; the object will therefore appear diſtinct.

Secondly a pencil of rays flowing from another point of the object, as L, will meet their axis in M, and, diverging from thence, will, after being refracted by the lens E F, become parrallel with reſpect to each other; but, with reſpect to the former, they will converge; becauſe, with regard to them, they diverged before they paſſed through the lens E F from I, a point farther diſtant than its focus of parallel rays. They will, therefore, conſequently, croſs them at ſome diſtance from it, ſuppoſe at H, where the pupil of an eye being placed to receive them, the point L will be repreſented at O. And for the ſame reaſon, the point K being repreſented at P, the object will be ſeen under the angle P H O, or E H F, which is much larger than that under which it would have appeared to the naked eye. It may be remarked here, that when we view an object through an inſtrument of this kind, we are then in reality looking at the image of that object through a ſingle microſcope. Thus M N is the image of that object we ſee through the lens or ſingle microſcope E F; ſo that the addition of the glaſs A B is only that we may have an image of the object to look at, larger than the object itſelf.

The glaſs ſituated next the object, is called the object-glaſs, and that placed next the eye, the eye-glaſs.

In ſome microſcopes there is a third glaſs placed between the object glaſs and the image, and is called a middle glaſs. This is placed there only to bring the rays to a focus the ſooner, in order that the image may fall nearer the object glaſs than it otherwiſe would do.

The proportion of magnifying in a microſcope of this kind, is nearly in a ratio compounded of the proportion which the diſtance of the image from the object glaſs bears to its diſtance from the eye glaſs, and of that which the diſtance of the object from the eye, bears to its diſtance from the object glaſs.

Catadioptric MICROSCOPE, is that which performs its effects by reflection and refraction conjointly; for it is conſtructed with a ſmall ſpeculum f e d (plate XXXIII, *fig.* 4) whoſe focus is at *f*; and it is plain, that if a ſmall object a b be placed a little further from the ſpeculum than the focus *f*, there will be formed a large image of it A B; which image will be inverted, and in proportion to the object, as the diſtance C e to the diſtance *f* e, as when an object lens was uſed.

Part of this image is viewed by the eye glaſs F D, which muſt be a meniſcus; becauſe the image being formed by reflection, it will be more perfect, and admit of a greater charge in the eye glaſs; and thoſe of the meniſcus form are beſt for this purpoſe, becauſe the errors of the rays, and conſequently the confuſion cauſed thereby, in the refraction made at the convex ſurface, are in a great meaſure, rectified by the contrary refraction at the concave ſurface.

Another ſort of catoptric or reflection microſcope is conſtructed with two ſpeculums a b c d and A B C D (*fig.* 5) with a central hole in each. The larger ſpeculum is concave, the other convex, and both of equal ſphericity. They have their focus at one inch diſtance, and placed one inch and a half from each other, ſo that an object O P Q, being placed a little before the ſmaller ſpeculum, might be nearer the larger one than its center E.

The ſolar or camera obſcura MICROSCOPE depends on the ſun-ſhine, and muſt be made uſe of in a darkened chamber, as its name implies. By this microſcope a louſe may be magnified to the length of five or ſix feet, or even a great deal more; but it is more diſtinct when not enlarged to above half that ſize.

* MIDAS, in fabulous hiſtory, a king of Phrygia, who having treated Bacchus with great magnificence, that god offered to grant him whatever he ſhould aſk. Midas deſired that every thing he touched ſhould be changed into gold. Bacchus conſented, and Midas every where found the effects of his touch; but he had ſoon reaſon to repent his folly, for wanting to eat and drink, the aliments no ſooner entered his mouth than they were changed into gold, which obliged him to have recourſe to Bacchus, to beſeech him to reſtore him to his former ſtate; on which the god ordered him to bathe in the river Pactolus, which from thence forward had golden ſand. Some time after, being choſen judge between Pan and Apollo, he gave another inſtance of his bad taſte, in preferring Pan's muſic to Apollo's, on which that god, being enraged, gave him aſs's ears.

MIDDLESEX, a county of England, bounded by Hertfordſhire on the north; by Eſſex on the eaſt, from which it is ſeparated by the river Lea; by Surry on the ſouth, from which it is parted by the river Thames; and by Buchinghamſhire on the weſt, being twenty-four miles long, fourteen broad, and about ninety-five in circumference. It is one of the leaſt counties of England, but is the richeſt, and if we include London and Weſtminſter, pays more taxes than any ten counties of England. It is divided into ſix hundreds, and two liberties, and beſides the cities of London and Weſtminſter, contains five market towns, viz, Brentford, Edgware, Enſield, Staines, and Uxbridge; with many fine villages, adorned with the ſeats of the nobility and gentry. It is in the province of Canterbury and dioceſe of London, and excluſive of the churches in the capital, has ſeventy-three pariſhes, beſides many chapels of eaſe. It ſends eight members to parliament. viz, four for the city of London, two for the county, and two for Weſtminſter. The air is pleaſant and healthful, and the ſoil extremely fertile, and indeed it can hardly be otherwiſe, conſidering the plenty of manure furniſhed by London: it chiefly conſiſts of paſture and garden grounds, for the ſupply of the capital; and here the art of gardening is brought to greater perfection than in any other part of Britain. The principal rivers are the Thames, the Coln, the Lea or Lee, and the New River; and there are here many medicinal ſprings

MID-HEAVEN, the point of the ecliptic that culminates, or in which it cuts the meridian.

MIDSHIP-BEAM, in naval architecture, that which is ſituated in the middle of the ſhip, which forms her extreme breadth, and from which the proportion of the maſts and yards are taken,

MIDSHIP-MAN, in the royal navy, a young officer, who walks on the quarter-deck and gangways of a ſhip, and forwards the commands of the ſuperior officers. They are generally volunteers like the cadets in the army, and ſerve in expectation of a commiſſion. They muſt, however, ſerve ſix years at ſea before they can be qualified to receive it.

* MILAN, a large city of Italy, and capital of the Milaneſe. It is one of the fineſt cities in Europe, being about ten miles in circumference, and containing three hundred thouſand inhabitants, on which account it has obtained the name of Milan the great. It is almoſt of a circular form, being ſurrounded with a wall, to which there are ten gates, but is of too great an extent to admit of regular fortifications. Its chief ſtrength conſiſts in the citadel, which is one of the ſtrongeſt fortreſſes in Italy. This city ſtands in a fruitful and pleaſant plain, and has the advantage of two navigable canals, by which it communicates with the rivers Adda and Teſin. The ſtreets are broad and neat, the ſquares ſpacious and handſome, and the houſes lofty. It is the ſee of an archbiſhop, who is always a cardinal; contains two hundred and thirty churches, has forty convents of men, and fifty of women, with other fraternities, and very large ſuburbs. The cathedral is a vaſt ſtructure, about five hundred feet in length, and three hundred in breadth, built of white marble. It ſtands in the center of the city, and they were upwards of three hundred years in finiſhing it. The roof is ſupported by one hundred and ſixty white marble pillars, ſtanding in four rows. It was to have had fourteen thouſand ſtatues as large as the life: but there are ſeveral thouſands ſtill wanting. The pavement of this church is more curious than that of St. Peter's at Rome. There are two fine brazen pulpits, each of which runs round a large pillar like a gallery, and is ſupported by huge figures of the ſame metal. There are a great many other buildings and curioſities worth taking notice of, particularly the great hoſpital, which is a magnificent ſtructure, capable of entertaining four thouſand infirm people, it having a revenue of ſeventy thouſand crowns a year. The moſt conſiderable trade of the inhabitants is in wine, corn, cheeſe, ſauſages, cutler's ware, ſilk and cotton ſtuffs, all ſorts of artificial flowers, paper, feathers, plate, and particularly ſilver and gold lace, and gold and ſilver brocades. The nobility make a very great figure in rich cloaths, coaches, and a numerous retinue of ſervants, and the women go abroad and enjoy more freedom here than in moſt other cities in Italy. It is ſeated on the river Olana, and ſeveral ſmall brooks. It is thirty-four miles north-eaſt of Caſal, ſeventy north of Genoa, and two hundred and ſeventy north-weſt of Rome. Long. 9. 42 E. Lat. 45. 31. N.

* MILANESE, or the dutchy of Milan, a country of Italy, bounded by Swiſſerland and the country of the Griſons on the north; by the territories of Venice and the duchies of Mantua and Parma on the eaſt; by the Appenine mountains on the ſouth, and by Piedmont on the weſt; extending about eighty-four miles in length, and ſixty in breadth. The chief rivers are the Po,

the Teſin, the Adda, and the Seſſia. The lakes are thoſe of Maggiore, Lugano, and Como. The firſt is fifty miles in length, and five in breadth, and has its ſource in Swiſſerland. The air and climate of this dutchy are very agreeable, and the whole country is almoſt one fruitful plain, producing corn, wine, flax, and all ſorts of fruit, and is adorned with a great variety of fine towns, palaces, and convents; inſomuch that there is hardly a finer ſpot of ground in all Europe. The Milaneſe had formerly dukes of their own, whoſe family became extinct about two hundred years ago; ſince which the French and Spaniards have had bloody wars, on account of this duchy; but the emperors of the houſe of Auſtria, and the king of Sardinia, have got it in their poſſeſſion.

MILE, *Mille Paſſus*, a meaſure of length or diſtance, containing eight furlongs, &c.

MILIARY, in general, ſomething reſembling millet ſeeds.

MILIARY FEVER, See *Fever*.

MILITANT, or CHURCH MILITANT, the body of chriſtians while here on earth.

MILITARY, belonging to the ſoldiery or militia.

MILITARY ARCHITECTURE, the ſame with fortification. See *Fortification*.

MILITARY ART, the ſcience or art of making and ſuſtaining war to advantage.

MILITARY COLUM, among the Romans. See *Column*.

MILITARY WAYS, *Viæ Militares*, the large Roman roads which Agrippa procured to be made through the empire in Auguſtus's time, for the marching of troops and conveying of carriages. Theſe were paved from the gates of Rome, to the utmoſt limits of the empire. See *Road*.

MILITIA, in general, the body of ſoldiers, or thoſe who make profeſſion of arms. In a more reſtrained ſenſe, militia denotes the trained bands of a town or county, who arm themſelves upon a ſhort warning, for their own defence. So that, in this ſenſe, militia is oppoſed to regular or ſtated troops. For the direction and command of the militia, the king conſtitutes lord lieutenants of each county.

MILK, *Lac*, a white juice which nature prepares in the breaſts of women, and the udders of other animals, for the nouriſhment of their young. It is derived from the pure chyle, conveyed by the arteries to the breaſts, and without any other coction filtered through the glands of which they conſiſt, without undergoing any conſiderable change.

Milk is a compoſition of three different parts, butyrous, caſeous, and ſerous; the butyrous parts are the cream and oil that ſwim a-top; the caſeous are the groſſer parts, and thoſe that coagulate are made into cheeſe; the ſerous are properly a lymph, and make whey. By their own milk, all the known lactiferous animals are nouriſhed, both male and female; and from this alone every ſuch animal prepares all the other parts, both the ſolid and fluid, by means of the vital actions. It is alſo certain that men may live for years upon milk alone, and perform all the actions of life, and have all the ſolid and fluid parts of their bodies perfectly elaborated. The human milk is very ſweet and thin; the next is that of aſſes, then that of mares, then that of goats, and laſtly of cows; whence it is preſcribed in this order to conſumptive perſons of weak viſcera. Dr. Cheyne extols a milk diet in his writings, particularly his method of cure in diſeaſes of body and mind his eſſays on the gout, health, and long life, &c. The beſt of all other milks is human milk, ſince it is moſt adapted to our natures; for which reaſon it is always to be preferred to the milk of other animals. It ought to be furniſhed by a ſound woman, who uſes due exerciſe, obſerves a laudable regimen, and is in the prime of her age. It is alſo beſt when the breaſts are drawn four or five hours after eating; for then the chyle is changed into concocted milk, and begins to aſſume the nature of the human fluids.

MILL, a machine or engine for grinding corn, &c. of which there are ſeveral kinds, according to the various methods of applying the moving power; as water-mills, wind-mills, &c.

In water-mills the momentum of the water is the moving power, and the attrition of the two ſtones in grinding, is the force to be overcome. Of theſe there are two kinds, viz. thoſe where the force of the water is applied above the wheel, and thoſe where it is applied below the wheel, the former being called over-ſhot, and the latter under-ſhot mills; and to theſe we may add a breaſt mill, where the water ſtrikes againſt the middle of the wheel.

Few people are ignorant, that corn is ground by two mill-ſtones placed one above the other, without touching. The lower or nether mil-ſtone is immoveable, but the upper one turns upon a ſpindle. The oppoſite ſurfaces of the two ſtones, which act to grind the corn, are not plain or flat; but the upper one is hollow, and the under one ſwells up; each of them being of a conic figure, whoſe axis indeed is very ſhort in proportion to the diameter of its baſe; for the upper one being ſix feet in diameter, is hollowed but about one inch at its center; and the lower one riſes but about three fourths of an inch. Theſe two mill-ſtones come nearer and nearer towards their circumference, whereby the corn that falls from the hopper has room to inſinuate between them as far as two thirds of the radius, which is the place where it begins to be ground, and where it makes the greateſt reſiſtance that it is capable of; the ſpace between the ſtones being in that place but about two thirds or three fourths of the thickneſs of a grain of corn. But as the millers have the liberty of raiſing or ſinking the upper ſtone a little, they can proportion its diſtance from the lower one, according as they would have the flour finer or coarſer. The circular motion of the upper mill-ſtone brings the corn out of the hopper by jerks, and cauſes it to recede from the center towards the circumference, where being quite reduced to flour, it is thrown out of the mill, by the centrifugal force of the ſtone, through a hole provided on purpoſe. As the water acts upon an over ſhot mill both by impulſe and weight, ſo does it likewiſe upon a breaſt-mill, or that where the water comes upon the breaſt, or middle part of the wheel. And here, though the weight of the water is not ſo great as in the overſhot-mill, being contained in the buckets of the lower quarter only, yet the impulſe of the water is much greater, the height of the water being increaſed nearly the ſemi-diameter of the great wheel, all other things being equal. If the height of the water remain the ſame, the aperture of the penſtock muſt be enlarged to nearly twice the area, that the force may be the ſame; ſo that to produce the ſame effect, twice as much water is neceſſary for a breaſt-mill as for an over-ſhot one, every thing elſe being the ſame.

As to the under-ſhot mill, it is evident there can be only the impulſe from the water; and therefore, the height of the water remaining the ſame, there muſt be a larger aperture of the penſtock for the diſcharge of a greater quantity of water in the ſame time, in order to produce the ſame effect as in the over ſhot or breaſt-mill: whence a greater expence of water will be made here than in any other mill, and can only be ſupplied for a conſtancy by a river: and where this can be had, the under-ſhot is the eaſieſt, cheapeſt, and moſt ſimple ſtructure a mill is capable of. The diameter of common mill-ſtones, according to Dr. Deſaguliers, is from five to ſeven feet, and their thickneſs twelve, fifteen, or eighteen inches; they laſt thirty-five or forty years; and when they have been long uſed, ſo that their thickneſs is conſiderably diminiſhed, they are cut anew.

MILL is alſo uſed for any machine, which being moved by ſome external force, makes a ſtrong impreſſion on things applied thereto: ſuch are fulling-mills, paper-mills, mills uſed in coining, gun-powder-mills, oil-mills, ſtamping-mills, ſugar-mills, &c.

MILL-DEW, *Rubigo*. See *Rubigo*.

MILL-POOL, a ſtock or pond of water, by the force of which the motion of a water-mill is effected.

The dam of a mill-pool is raiſed much in the ſame manner as for fiſh-ponds.

MILLEFOLIUM, yarrow, in botany, a perennial plant which grows plentifully by the ſides of fields and on ſandy commons, and is found in flower greateſt part of the ſummer. The leaves and flowers of milfoil are greatly recommended by ſome of the German phyſicians, as mild corroborants, traumatics, and antiſpaſmodics, in diarrhœas, hemorrhages, hypochondriacal and other diſtempers. They promiſe by their ſenſible qualities, to be of no inconſiderable activity. They have an agreeable, though weak, aromatic ſmell, and a bitteriſh, rough, ſomewhat pungent taſte. The leaves are chiefly directed for medicinal uſe, as having the greateſt bitterneſs and auſterity: the flowers have the ſtrongeſt and moſt ſubtile ſmell, and promiſe to be of moſt efficacy, if the plant has really any ſuch efficacy as an anodyne or antiſpaſmodic. Dr. Grew obſerves, that the young roots have a glowing warm taſte, approaching to that of contrayerva, and thinks they might in ſome meaſure ſupply its place; but adds, that they loſe much of their virtue in being dried, from whence it may be preſumed that their active matter is of another kind.

MILLENARIANS, or CHILIASTS, a name given to thoſe, who, in the primitive ages, believed that the ſaints will one day reign on earth with Chriſt a thouſand years. The former appellation is of Latin original, the latter of Greek, and both of the ſame import. The Millenarians held, that after the coming of Antichriſt, and the deſtruction of all nations, which ſhall follow, there ſhall be a firſt reſurrection of the juſt alone: that all who ſhall be found upon earth, both good and bad, ſhall continue alive; the good, to obey the juſt, who are ariſen, as their princes; the bad, to be conquered by the juſt, and be ſubject to them: that Jeſus Chriſt will then deſcend from Heaven in his glory; that the *city* of Jeruſalem will be rebuilt, enlarged, embelliſhed, and its gates ſtand open night and day. They applied to this new Jeruſalem, what is ſaid in the Apocalypſe, ch. xxi. and to the temple all that is written in Ezekiel xxxvi. Here, they pretended, Jeſus Chriſt will fix the ſeat of his empire, and reign a thouſand years with the ſaints, patriarchs, and prophets, who will enjoy perfect and uninterrupted felicity. This reign of our Saviour on earth is uſually ſtyled the millennium, or reign of a thouſand years.

MILLEPEDES, the common woodlouſe, an oblong inſect, with fourteen feet, notched along the ſides, rolling itſelf up into a round ball on being touched; found in cellars, and under ſtones and logs of wood in cold moiſt places; rarely met with in the warmer climates. Thoſe which have a white ſilver-like hue, are accounted the beſt; and the black the worſt. Millepedes, have a faint diſagreeable ſmell, and a ſomewhat brackiſh, ſweetiſh, unpleaſant taſte. They are celebrated as reſolvents, aperients, and diuretics; in jaundices, aſthmas, ſcrophulous and other diſorders; but that their virtues are ſo great as they are generally ſuppoſed to be, may be juſtly queſtioned, at leaſt when given in the cuſtomary doſes. Two hundred have been taken every day for ſome time together without producing any remarkable effect: in large doſes, indeed, it is probable that their activity may be conſiderable; as they are ſaid to have ſometimes produced an univerſal heat and thirſt with a pain in the region of the pubes, and ſometimes a ſcalding of urine. Theſe inſects may be commodiouſly ſwallowed entire, as they ſpontaneouſly contract themſelves, on being touched, into the form of a pill. In the ſhops they are commonly reduced into powder. The college of Edinburgh directs two ounces of live millepedes to be ſlightly bruiſed, and digeſted for a night in a pint of Rheniſh wine, after which the liquor is to be preſſed through a ſtrainer.

MILLET, Milium, the ſeed of a plant which is refrigerating and drying; it is of bad juice, difficult of digeſtion, binds the belly, and generates flatulences; it is, however, well known to be a very grateful food to many nations at preſent. In former times it ſerved to make bread, under a dearth of better corn, as we are aſſured by Dioſcorides, Pliny, Galen, and others of the ancients. Among the Italians, ſays C. Bauhine, loaves made of millet, which are yellow, are eaten hot by many, not out of neceſſity, but for their ſweetneſs; but, when this bread is grown hard, it is quite black. Of the flour of millet and milk the Italians make fine cakes, which muſt be eaten as ſoon as dreſſed, or elſe they become glutinous, and ungrateful to the taſte. In former times they made a ſort of white puddings of millet, as Pliny tells us. And among the Coſſacks and Tartars, their principal food is millet, the crude meal of which they mix with the milk of mares, or with blood drawn from the crural vein of their horſes. A pudding, prepared of millet, boiled in milk, with an addition of butter, and ſugar ſprinkled over it, is much in requeſt among the Germans at preſent; and theſe puddings have been long ago introduced into England, and are ſtill in faſhion. The flower of millet was formerly uſed in fomentations for the gripes, and for pains of the head and nerves; it was applied externally in bags, becauſe the uſe of it in cataplaſms was difficult, on account of its friability. If the membrane of the brain happens to be wounded, it is excellently conglutinated, ſays Archigenes, by infuſing thereon the juice of calaminth, and ſprinkling it with the dry flour of millet. A decoction of millet, with figs and raſins, is called by Heurnius a noble ſudorific and diuretic. Or, take of decoction of millet, boiled till it burſts, four ounces; white wine, two ounces. Let the patient take it hot. *Cheſneau. Laii. Hiſt. Plant.*

Millet is diuretic and aſtringent; the ſeeds are of extraordinary ſervice in diſeaſes of the lungs, and exulcerations of the kidneys; made into a cataplaſm, they are anodyne and reſolvent. *Hiſt. Plant. adſcript. Boerh.*

Indian MILLET. – It delights in a fat and humid ſoil; for which reaſon ſome ſow it in their fields to correct their luxuriance: it was brought from India into Spain, Italy, and other warm countries: they ſow it in ſummer, and reap it in autumn.

The ſeed is like panic both in taſte and temperament. The pooreſt ſort of people in Italy, and the peaſants in the Paduan, grind the ſeed, and make it into loaves which are friable, and afford but little nutriment, being black, difficult of digeſtion, and binding. In Tuſcany they ſow it more for the ſake of feeding their poultry, than to ſerve as aliment for men. They, alſo, give it to their cows, horſes and ſwine. Of the pith of the ſtalks is prepared an excellent remedy for the ſtrumæ; the preparation of which ſee in the Bauhines and Matthiolus; which laſt author commends, alſo, the flowers, for uterine fluxes and the dyſentery. *Raii Hiſt. Plant.*

MILLING, in the manufacture of cloth, the ſame with fulling.

MILLING *of Silk*, an operation otherwiſe called throwing. See *Throwing*.

MILLION, in arithmetic, the number of ten hundred thouſand, or a thouſand times a thouſand

MILT, in anatomy, a name ſometimes given to the ſpleen.

MILT, or MELT, a denomination by which ſome call the roes of fiſhes.

* MILTON (JOHN) a celebrated poet, was deſcended from an ancient family of that name at Milton, near Abingdon, in Oxfordſhire, and was the ſon of Mr. John Milton, ſcrivener, in London, where he was born the 9th of December, 1608. He was educated under a domeſtic tutor, and likewiſe ſent to St. Paul's ſchool, where he diſcovered ſuch an inſatiable thirſt after learning, that from his twelfth year he accuſtomed himſelf to ſtudy till midnight, notwithſtanding the weakneſs of his eyes, and his being ſubject to frequent pains in the head. He was ſent to Cambridge at fifteen years of age, and the ſame year paraphraſed ſome of the Pſalms. At ſeventeen, he compoſed ſeveral poems, in Engliſh and Latin. After he had taken the degree of maſter of arts in 1632, he returned to his father, and two years after wrote his Comus, a maſk, and in 1637 his Lycidas. His mother dying; he obtained permiſſion from his father to travel. At Paris he converſed with Grotius; and going into Italy, contracted a friendſhip with the greateſt wits and the moſt illuſtrious of the learned, and became ſo great a maſter of the Italian tongue, that he compoſed very fine Italian verſes. He deſigned to have paſſed into Sicily and Greece, but being informed of the melancholy news of a civil war being broke out in England, he returned about the time. In 1641 he publiſhed Five tracts relating to Church Government, and two years after married Mary Powell, the daughter of a gentleman in Oxfordſhire, who about a month after, viſiting her father in the country, refuſed ever to return to her huſband. After having publiſhed ſeveral pieces in favour of divorce, he prepared for a ſecond marriage, which his wife being informed of, found means to ſee him again, and ſo earneſtly ſupplicated him to forgive her, that he ſuffered himſelf to be ſoftened and took her home, and he had afterwards ſeveral children by her; but ſhe at laſt died in child-bed, as did his ſecond wife, after whoſe death he married a third. In 1644 Mr. Milton publiſhed his Treatiſe on Education, and his Areopagitica, in defence of the liberty of the preſs, and the following year his Juvenile Poems. He continued his ſtudies till after the death of King Charles I. and then publiſhed his Tenure of Kings and Magiſtrates. He now became ſecretary to the council of ſtate. The *Icon Baſilike* appearing ſoon after the death of king Charles I. to whom it was attributed, Milton, at Cromwell's deſire, anſwered it, in a work entitled *Iconoclaſtes*. At length Salmaſius undertaking the defence of Charles I. compoſed his *Defenſio Regia*, againſt the parliament of England, on which Milton was choſen to anſwer him. He engaged in that work, though he had almoſt loſt an eye, and though the phyſicians foretold, that he would certainly loſe the other, if he continued. His anſwer appeared in 1651, under the title, *Pro Populo Anglicano Defenſio*, which made much noiſe, and was burnt both at Paris and at Toulouſe, by the hands of the hangman; but though Milton became blind, as had been foretold by his phyſicians, this did not prevent his publiſhing in 1654, his book entitled, *Defenſio Secunda*, and the following year his *Defenſio pro ſe*. In 1659 he publiſhed a Treatiſe on the Civil power in Eccleſiaſtical Cauſes, and other works. At the Reſtoration he kept himſelf concealed till after the act of oblivion was paſſed, and ſoon after, is ſaid, to have been offered the place of Latin ſecretary to the king, which he refuſed. In 1667 he publiſhed his Paradiſe Loſt. In 1670 he publiſhed his Hiſtory of England, and in 1671 his Paradiſe Regained. He publiſhed ſeveral other works, and

died at Bunhill, on the 15th of November, 1674, leaving ſeveral daughters.

A monument was ſome years ago erected to his memory, in Weſtminſter Abbey, at the expence of William Benſon, eſq; auditor of the impreſt.

MILVUS, the kite, in ornithology, a ſpecies of falcon, with a forked tail, a yellow cera, a brown body, and a whitiſh head. It is a very common bird with us, about the ſize of a large tame pigeon.

MIND, *Mens*, *νȣς*, a thinking intelligent being, otherwiſe called ſpirit, in oppoſition to matter or body. The culture of the human mind is more immediately taught in the ſciences of logic and ethics. See *Logic* and *Ethics*.

When the mind, ſays Mr. Locke, turns its view inwards upon itſelf, thinking is the firſt idea that occurs; wherein it obſerves a great variety of modifications, whence it frames to itſelf diſtinct ideas. See *Idea*.

Thus the perception annexed to any impreſſion on the body by an external object, is called ſenſation; when an idea recurs without the preſence of the object, it is called remembrance; when ſought after by the mind, and brought again into view, it is recollected; when the ideas are taken notice of, and as it were regiſtered in the memory, it is attention; when the mind fixes its view on any idea, and conſiders it on all ſides, it is called ſtudy. See *Senſation*, *Remembrance*, &c.

* MINDEN, Battle of. By an unfortunate ſtroke at Bergen, the whole plan of operations for the year 1759, was fruſtrated. In conſequence of which, duke Ferdinand retreated, and the duke de Broglio, ſince created a marechal of France, joined his victorious troops to the grand army, commanded by M. de Contades. The French army after this junction, amounted to at leaſt ſixty-eight thouſand men, ſome Gazettes ſaid ſeventy-five-thouſand. The allies were not inferior, but were ſoon after conſiderably weakened by making detachments for garriſons. Contades purſued, and as he thought, with great caution; he was fortunate in taking ſuch ſteps, as did not expoſe him to the enemy, but it was rather the effect of chance than judgment, for oftentimes he was obliged to encamp in thoſe places, where he was happily ſecure, when he intended to have gone further. This good luck continued with him all June and moſt part of July. On the thirty-firſt of this month, 1759, the two armies encamped about the diſtance of ſeven miles from each other. The allies extended from Todnhauſen, almoſt to Hille, making a line of little leſs than nine miles, while the French were more compact, they did not take up the ſpace of above three miles. They were a little higher than Minden, having that city and Torſſmoor in their front. About evening they ſtruck their tents, and advanced to the moor or marſh, and in the dead of the night proceeded to Minden heath. Marechal Contades drew up his army in a very imprudent manner, if we may credit the report of his own officers, or the diſlike they expreſſed of it. He placed his infantry on the wings, and his cavalry in the center. He expected to find the allies in that diſpoſition; but ſurely no general would place his infantry on the wings, where there was a probability of being flanked, and as the French army was by much the ſuperior, it could conſequently form a larger front; therefore Contades ſeems ſtrangely erroneous in his judgment, to think that duke Ferdinand ſhould draw up in ſuch a diſadvantageous manner on a plain. He alſo entertained a notion, that the left wing of the duke's army, commanded by lieutenant-general Wangenheim, which extended to the banks of the Weſer, was extremely weak, that it conſiſted rather of a detachment than a wing of the army, becauſe it was ſeparated, and that his main force was at Hille. Certain it is, his main force was near Hille, and Wangenheim's corps was encamped at ſome diſtance from it; but ſtill there was a communication between them. On the thirtieth and thirty-firſt days of July, marechal Contades, having called in all his detachments, by it alarmed the commander of the allied army, who gueſſed at the marechal's deſign, and therefore on the thirty-firſt, at five o'clock in the afternoon, he ordered the army to hold themſelves in readineſs to march at one in the morning, and gave all his advanced poſts a ſtrict charge to be very attentive to the motions of the enemy, during the night, to prevent a ſurprize. As ſoon as the French army entered the heath of Minden, marechal Contades detached the duke de Broglio, to attack Wangenheim's corps. But before this could be executed, two deſerters came to the tent of prince Ferdinand, and acquainted him with the deſign of the enemy. They had, indeed, left their regiments four hours before, but ſtill they came time enough to confirm thoſe ſuſpicions,

picions, which reaſon and experience had ſuggeſted. The prince ſent advice of it to Wangenheim at three o'clock, and at the ſame time, ſent all the aid-de-camps about him, to every part of the army, with orders to move without the leaſt delay. Broglio's corps appeared before Todnhauſen between three and four o'clock, but did not fire till the cannon of the left wing ſhould play on the village of Hille, which was not till four, then he attacked the advanced guard, but how great was his ſurprize, when, inſtead of finding Wangenheim's troops aſleep in their tents, as he expected, they were drawn up in order of battle, and had even an intrenched poſt at Todnhauſen; he however began the attack, by a diſcharge of cannon, which was at firſt but faintly returned, but after ſome more ſalutes of this ſort, they quickly gained the aſcendant, and Broglio thought proper to retreat a little. At four o'clock the village of Hille was cannonaded from a battery, which the enemy had erected at Eikhorſt. The Engliſh officers were alarmed at this, for they had never been made acquainted that the enemy intended to give battle, though the reſt of the army had. The marquis of Granby, as ſoon as he heard the firing, immediately ordered his horſe, and ſent to lord George Sackville's quarters, to know if there was any orders, and what the firing was; every thing was quiet there, and the meſſenger returned without having been able to learn any thing. The marquis then repaired to the duke's quarters, and preſently found that here it was the enemy had been firing. About this time the army was put in motion, except that part of it under the command of general Wangenheim, which kept its old poſition at Todnhauſen. By ſome miſtake in the hurry of making ready, the artillery never received orders to advance till very late; the commanding officer enquired after them, and received them from lord George Sackville between ſix and ſeven o'clock. As ſoon as the army had marched through the great wood, and being got on Minden heath, the infantry were formed in ſight of the enemy; a body of German cavalry was on their left, which preſerved the communication with Wangenheim, and that was all the ſervice they were of, for they were never in the action; another body of cavalry, commanded by lord George Sackville, was on their right, but the wood which ran obliquely and between them, hindered them from ſeeing each other. What followed muſt aſtoniſh every military and common capacity: Six regiments of Britiſh infantry, aſſiſted by two of Hanoverian guards, were detached from the right of the line of infantry, to charge the enemy's center, which conſiſted of ſixty ſquadrons of cavalry; they obeyed this order, and to their eternal honour, by half an hour paſt eight, drove the enemy before them, without any other aſſiſtance, than from the artillery of their own country. In vain did the French cavalry attempt to rally; they could not look this little corps of infantry in the face.——In vain was it taken in front and flank by their artillery, its reſolution was not to be daunted; the ground where they marched, was ſtrewed with ſlaughter and blood, and carnage now paved the path to glory. Juſt before this brave body of infantry advanced to attack, duke Ferdinand ſent captain Winſchingrode, his Heſſian aid-de-camp, with an order to lord George Sackville, to march with the right wing of cavalry, and form a line behind the infantry, which he might do by marching through the wood, which hindered him from ſeeing the infantry; lord George did not underſtand how this march was to be made, and made ſome heſitation concerning the order, which, as the aid-de-camp thought he delivered in a very clear manner, and fully perſuaded that lord George underſtood it, he immediately left him; but as lord George obſerves, "It is very natural for a perſon to ſup-"poſe, that what he means to expreſs, "he has expreſſed plainly, though the "perſon to whom he ſpeaks, finds great "difficulty in underſtanding it." No ſooner was Winſchingrode gone, than colonel Ligonier came to lord George Sackville, with an order from the duke, for his lordſhip to march with the cavalry under his command, and profit of the diſorder which appeared in the enemy's cavalry; upon which his lordſhip began to advance when colonel Fitzroy arrived with another order from the duke, for him to advance with the Britiſh cavalry only. Lord George told them their orders diſagreed, "In numbers, my lord, "ſaid Fitzroy, but their deſtination is "the ſame, *to the left*." Neither of theſe gentlemen could tell which came laſt, as they both ſat out at different times, and both were poſitive in their injunctions. Lord George thereupon went to the duke himſelf, and having received the order from his own mouth, proceeded to obey it. But now it was too late to do any ſervice, the little body of infantry had obliged the enemy to retreat, but they did it in extreme good order, by the ſpecial care and vigilance of the duke de Broglio, who having made no impreſſion on Wangenheim, drew off to ſuccour the center; and here it is amazing, that the French cavalry did not double up, and incloſe thoſe few combatants, for they were at a diſtance from all their friends. There is evidently great room to charge all the c———'s with miſconduct, lord G. S. for not immediately obeying the order, brought by captain Winſchingrode, duke F. for never putting the allied army in a line, and ſuffering the eight regiments of infantry to be unſuſtained and uncovered in their flanks, though the reſt of the infantry was behind them, and the cavalry of the left wing nearer to them than the cavalry on their right. It may be thought temerity in us to ſay, that ſince the commander on the right did not obey, it was but reaſonable to aſſiſt them with ſome commander that would. The marechal de Contades was inexcuſable for his diſpoſitions, which have often loſt his country great advantages, and by which he loſt his command, and Broglio, after he joined the center, for not ſurrounding the detached body of infantry, which would have given them the victory. The French not having been moleſted by the cavalry of either wing, in their retreat, had an opportunity of regaining their former advantageous camp. They had indeed loſt the honour of the day, and miſſed the ſtroke which they had meditated. They had likewiſe loſt a great number of men: but all their loſſes and diſgraces might be repaired, and there ſeemed nothing deciſive in the day of Minden It had certainly happened as it then appeared, if the duke, who foreſeeing this, had not formed the plan and detached the hereditary prince of Brunſwick, at five in the morning of that day. This young hero attacked a large body of the French under the duke de Briſac; this body, though poſted in a moſt advantageous manner, he intirely defeated, and obliged them to take refuge in Minden. The news of this blow came with an ill omen to M. de Contades, in the inſtant when the Engliſh infantry began to engage his center. The enemy themſelves could not help admiring the dexterity of the ſtroke under which they ſunk: and full of aſtoniſhment at a conduct at once ſo daring and judicious, paid the juſt applauſe to a general who could detach with ſecurity ſo large a body from his army, when he was going to attack an enemy already much ſuperior to him in numbers. This happy ſtroke decided the affair; all the paſſes through which the French could draw ſuccour or proviſion, were ſeized. They relinquiſhed their ſtrong poſt; they fled through Minden, and paſſing the Weſer, retreated to the eaſtward of that river; thus loſing all the advantages which they had made in the campaign, and forced to retreat through a country different from that through which they had advanced, and in which they had taken no meaſures to procure ſubſiſtence. The loſs of the French in this action, amounted to about ſeven thouſand men killed, wounded, and priſoners; among whom were many officers of conſiderable rank. The loſs of the allies was not more than two thouſand. The Engliſh, as they gained the greateſt glory, ſo they were the greateſt ſufferers: twelve hundred of the killed and wounded were of that nation. The prince, on the day after the battle, paid the due honours to theſe illuſtrious corps, as well as to the ſeveral of the Hanoverians who had behaved in the ſame gallant manner. He did juſtice to the merit of the officers; he diſtinguiſhed their names; and even particularized ſo low as captains. To ſome in the moſt obliging manner he ſent conſiderable preſents; and he omitted nothing to ſhew that he knew what it is to be well ſerved and how to encourage the troops and officers to do their duty with ſpirit and chearfulneſs. Although the Engliſh had the greateſt ſhare in the honour of this ſignal day, and that the French acknowledged their merit in the ſtrongeſt terms, yet a cloud was caſt over their triumph. There were ſome expreſſions in the orders for the rejoicing, which were ſuppoſed to convey a very ſevere reflection on lord G. S. commander in chief of the Engliſh forces. The duke required with an emphaſis, which ſeemed particularly pointed, that his orders by his aid-de camps for the future ſhould be more exactly obeyed. In a manner ſtill leſs to be miſunderſtood, he expreſſed his concern that the marquis of Granby had not had the command of the Britiſh cavalry. Had he commanded, his highneſs made no doubt that the ſucceſs of the day had been much more compleat and brilliant. The ſevere inſinuation concerning the diſobedience to orders, and the invidious compliment to a ſubordinate

ordinate officer, were clear declarations. The news of a victory ſo glorious to our troops, and of a cenſure ſo diſgraceful to their commander, came at once to England. In proportion to the joy which filled all hearts, in proportion to their opinion of the great general to whom they owed ſo ſeaſonable an advantage, was their indignation againſt the unfortunate commander to whom it was attributed that this advantage was not greater. The public, as uſual, judged definitively upon the firſt charge. They never pardon a general whoſe error it is to fall ſhort. In vain they are prayed to ſuſpend their judgment, and to wait for a full diſcuſſion: the matter is already decided; they have a fact againſt an officer, and they look upon all reaſoning in his favour, not ſo much as a defence of his conduct, as the exertion of eloquence and artifice to palliate a neglect of duty. This indeed makes the caſe of officers particularly hard; but then it always ſhews them what they have to do. The merits of the matter are ſtill regarded in the ſame light by the public; but the heat, the eagerneſs, and curioſity of the firſt movements being over, the matter will be heard whenever it comes to be again diſcuſſed with leſs attention, but with leſs paſſion too. It is not for us to deliver any opinion in ſo nice a controverſy; we have in points of leſs moment hitherto declined it, and we ſhall always decline it, until the proper judges, before whom it probably will come, ſhall have taught us what to think. There is indeed no doubt, that if the cavalry of the allies right wing, ſituated as it was, had been brought to act at the critical time when it had orders to move, the battle of Minden had proved as deciſive as that of Hochſtet. But whether it was a fault in the giving or the delivering of the orders, or whether it was ſome miſapprehenſion in him who received them, we cannot but ſincerely pity a commander of ſuch admirable talents, who by the error or the misfortune of a moment, loſt an opportunity that would have ranked him for ever with the Marlboroughs and Henrys. A few days after the battle, his lordſhip reſigned his command, and returned to London. He was but a few days in London when he was deprived of all his military employments. The marquis of Granby, whom the opinion of duke Ferdinand, and the deſires of the whole army had pointed out, ſucceeded him in his command. Whilſt theſe changes were making, duke Ferdinand loſt no time to improve his victory by the purſuit of the French. The allies were not indeed able to overtake the main body of their army, but they harraſſed them extremely, and the French were obliged to ſacrifice a great part of their army piece-meal, to preſerve the reſt entire. The neceſſity of providing ſubſiſtence drove them towards Caſſel; the prince purſued them, obliged them to evacuate that place, and once more freed that poor diſtreſſed country from the French tyranny. The caſtle of Ziegenhayn, after an hour's defence, gave the allies about four hundred priſoners. After this, the hereditary prince of Brunſwick, equally conſpicuous in the greater and the leſſer operations of war, made a private march at night (Auguſt 27th) in order to ſurprize a corps of French irregulars, commanded by the famous partizan Fiſcher, which were poſted at Wetter, where it was convenient for the allies to encamp. This corps he entirely routed, killing a great number, and taking four hundred. The French threw a garriſon into Marpurg, in hopes of putting ſome ſtop to the rapid career of the allies. In effect, this did prove an obſtacle for ſome days, but at length the caſtle ſurrendered, and the garriſon, conſiſting of between eight and nine hundred men, became priſoners of war. Here a bound was ſet to the progreſs of the allied arms; not that they were ſtopped by any conſiderable obſtruction from the main body of the French in that quarter, but from ſome effects in another quarter of the unſucceſsful beginning of the campaign, from which the battle of Minden had not yet perfectly diſengaged them. Munſter was ſtill behind them, and ſtill in the hands of the enemy, who had a powerful garriſon in that city. M. de Contades, who even after his defeat exceeded the allies in numbers, and had now no further view of an offenſive campaign, ſent a ſtrong body under d'Armentiers, which was reinforced by ſome troops from the Lower Rhine to near 15,000 men, to cover that place. Duke Ferdinand had before detached general Imhoff from Caſſel, in order to reduce it. On the approach of d'Armentiers, Imhoff was obliged to raiſe the ſiege; but being ſoon after reinforced, the French commander retired in his turn towards Weſel, the poſſeſſion of which place has all along proved of infinite importance to the French in all their operations. The ſiege of Munſter was again reſumed, but the buſineſs threatened to be difficult and tedious. This, however, was the only rub which the allies encountered. In all other reſpects they were perfectly fortunate. They had driven their enemy two hundred miles before them, and at the end of the campaign, after all their efforts, and all their ſanguine hopes of conqueſt, ſat them down juſt where they had begun it. The event of the battle of Minden, and the ſubſequent misfortunes of the French arms, threw Verſailles into the utmoſt confuſion. The news of that defeat arrived juſt as the king was taking horſe to hunt. He retired, ſilent and dejected, into the apartment of madam de Pompadour, and for ſome time ſaw none of his miniſters. The duke of Broglio and M. de Contades mutually accuſed each other for the ill conduct of that day. The public acquitted Broglio; Belleiſle and his general, Contades, loſt all reputation; but the duke ſtill preſerved his employment, and a conſiderable part of his influence at court. As ſoon as the firſt confuſion and ſurpriſe of ſo unexpected an event was a little abated, it was reſolved to ſend reinforcements to their army in Germany, and at the ſame time to ſend thither ſome officer of experience and authority, who might judge and compoſe, if poſſible, the differences which ſubſiſted between the commanders; as well as to aſſiſt in the deliberations for retrieving their affairs. Public misfortunes call great men from their obſcurity. M. de Etrees was choſen on this occaſion, and inveſted with an authority which he unwillingly accepted. When he arrived at the French camp, (September 25th) he could not avoid a ſigh, on viewing the ruins of that army, which had triumphed under his command at Haſtenbeck. However, his behaviour to M. de Contades, was polite and generous. The old marechal told him, that he was not come to take his command, but to ſerve under him; and whilſt he aſſiſted him with his advice, he would receive his orders. As ſoon as the officers could leave their poſts, lord George Sackville, at his own requeſt, was admitted to a trial by a court-martial. The charge was diſobedience of orders, which was proved, but the c—— incurred the laſh of partiality, and the odium of being under the neceſſity of proving the charge, in order, as it is ſaid, to juſtify the taking away his commiſſions. Part of the trial was afterwards laid before the king, who was pleaſed to confirm the ſentence, that he (lord George) was unfit for any military employment. Partiality and malice never appeared in more ſtriking colours, than in the courſe of this proceeding; the witneſſes for the priſoner were diſmiſſed from their employments; how the evidence for the crown fared, needs no explanation: take colonel S——r for an inſtance; and admitting lord George to be guilty, obſerve with what indignity he treats his ſuperior officer, as if it were to ſhew his own courageous ſpirit. Thoſe who have read the whole trial, cannot but have noticed the malicious obſervations of this invidious witneſs; and however blameable lord George might appear, whoſe conduct we do not pretend to juſtify, can the attempts made to ſupport ſuch a witneſs, be called impartiality? Good manners was the leaſt favour that could be offered the priſoner; if they were by obligation obliged to be partial, they were not by obligation obliged to be uncivil: good manners compoſe a duty we owe to all mankind, and where this duty is thrown aſide, the void is commonly filled with ſcurrility and abuſe. Even in caſes of murder, we have ſeen the noble priſoner treated with all imaginable reſpect; in that caſe life and death were only depending, but in this, reputation and all were at ſtake.

The orders of his Serene Highneſs, Prince Ferdinand of Brunſwick, relative to the behaviour of the troops under him, at the battle near Minden, on the firſt of Auguſt, 1759.

His ſerene highneſs orders his greateſt thanks to be given the whole army, for their bravery and good behaviour yeſterday, particularly to the Engliſh infantry, and the two battalions of Hanoverian guards; to all the cavalry of the left wing, and to general Wangenheim's corps, particularly the regiment of Holſtein, the Heſſian cavalry, the Hanoverian regiment du corps and Hamerſtin's; the ſame to all the brigades of heavy artillery. His ſerene highneſs declares publicly, that next to God, he attributes the glory of the day to the intrepidity and extraordinary good behaviour of theſe troops, which he aſſures them he ſhall retain the ſtrongeſt ſenſe of as long as he lives; and if ever, upon any occaſion, he ſhall be able to ſerve theſe brave troops, or any of them in particular, it will give him the utmoſt pleaſure. His ſerene highneſs orders his particular thanks to be likewiſe given to general Sporcken, the duke of Holſtein, lieutenant-generals Imhoff and Urff. His ſerene highneſs is extremely obliged to the count de Buckeburg, for his extraordinary care and trouble in the management of the artillery, which was ſerved with great effect; likewiſe to the commanding officers of the ſeveral brigades of artillery, viz. Col. Browne, lieutenant-colonel Hutte, major Haſſe, and the three Engliſh captains, Philips, Drummond, and Foy. His ſerene highneſs thinks himſelf infinitely obliged to major-generals Waldegrave and Kingſley, for their great courage and good order, in which they conducted their brigades. His ſerene highneſs further orders it to be declared to lieutenant-general the marquis of Granby, that he is perſuaded, that if he had had the good fortune to have him at the head of the cavalry of the right wing, his preſence would have greatly contributed to make the deciſion of that day more compleat and more brilliant. In ſhort, his ſerene highneſs orders, that thoſe of his ſuite whoſe behaviour he moſt admired, be named, as the duke of Richmond, colonel Fitzroy, captain Ligonier, colonel Watſon, captain Wilſon, aid-de-camp to major-general Waldgrave, adjutant-generals Erſtoff, Bulow, Durendolle, the counts Tobe and Malerti; his ſerene highneſs having much reaſon to be ſatiſfied with their conduct. And his ſerene highneſs deſires and orders the generals of the army, that upon all occaſions when orders are brought to them by his aid-de-camps, they be obeyed punctually, and without delay.

And his ſerene highneſs on diſcovering a miſtake in the preceding order of thanks, to the officers of the Britiſh artillery, by which captain Macbean was omitted to be mentioned, his ſerene highneſs was pleaſed to write a letter with his own hand, to captain Macbean, which was delivered by his excellency count La Lippe Buckeburg, grand maſter of the artillery in the allied army, and of which the following is a tranſlation.

SIR,

It is from a ſenſe of your merit, and a regard for juſtice, that I do in this manner declare, I have reaſon to be infinitely ſatisfied with your behaviour, activity, and zeal, which in ſo conſpicuous a manner you made appear at the battle of Todnhauſen on the firſt of Auguſt. The talents which you poſſeſs in your profeſſion, did not a little contribute to render our fire ſuperior to that of the enemy; and it is to you and your brigade that I am indebted, for having ſilenced the fire of a battery of the enemy, which extremely galled the troops, and particularly the Britiſh infantry.——

Accept then, Sir, from me, the juſt tribute of my moſt perfect acknowledgments, accompanied with my ſincere thanks. I ſhall be happy in every opportunity of obliging you, deſiring only occaſions of proving it, being with the moſt diſtinguiſhed eſteem,

Your devoted, and
Entirely affectionate ſervant.
FERDINAND, Duke of Brunſwick and Lunenburge.

To captain Macbean, of the royal Britiſh artillery.

Again his ſerene highneſs on the third iſſued the following order:

In the compliment his ſerene highneſs made to the troops yeſterday, he forgot four regiments that particularly diſtinguiſhed themſelves, viz. Hardenburgh's third battalion of Heſſian guards, prince William's, and Gillſe's: it is not that his ſerene highneſs has reaſon to complain of any others, but as they had particular opportunities of diſtinguiſhing themſelves, it is for that reaſon his ſerene highneſs mentions the attention he himſelf gives to their good conduct:

Head quarters at Bielefield.

His ſerene highneſs duke Ferdinand ſent orders to monſieur Hedeman, his treaſurer, to pay the following officers of the Britiſh artillery the under-mentioned gratuities, as a teſtimony of his great ſatisfaction of their gallant behaviour in the late action of the firſt of this month:

To captain Philips	1000	crowns
To captain Macbean	500	
To captain Drummond	500	
To captain Williams	500	
To captain Foy	500	

I hope the ſaid gentlemen will accept of this preſent from his highneſs, as a mark of his particular eſteem for them.

Among the papers which were taken at Detmold, on the 5th of Auguſt, by his majeſty's light troops, an original letter was found, from the marſhal duc de Belleiſle to marſhal Contades, dated Verſailles, July 23d, 1759, in which there is the following paſſage.

I am ſtill afraid that Fiſcher ſets out too late; it is, however, very important, and very eſſential, that we ſhould raiſe large contributions. I ſee no other reſource for our moſt urgent expences, and for refitting the troops, but in the money we may draw from the enemy's country; from whence we muſt likewiſe procure ſubſiſtence of all kinds, (independently of the money) that is to ſay, hay, ſtraw, oats, for the winter, bread, corn, cattle, horſes, even men, to recruit our foreign troops. The war muſt not be prolonged, and perhaps it may be neceſſary, according to the events which may happen, between this time and the end of September, to make a downright deſert before the line of the quarters, which it may be proper to keep during the winter, in order that the enemy may be under a real impoſſibility of approaching us: at the ſame time reſerving for ourſelves a bare ſubſiſtence on the route, which may be the moſt convenient for us to take, in the middle of the winter, to beat up, or ſeize upon the enemy's quarters. That this object may be fulfilled, I cauſe the greateſt aſſiduity to be uſed, in preparing what is neceſſary for having all your troops, without exception, well cloathed, well armed, well equipped, and well refitted, in every reſpect, before the end of November, with new tents, in order that, if it ſhould be adviſeable for the king's political and military affairs, you may be well able to aſſemble the whole, or part of your army, to act offenſively, and with vigour, from the beginning of January, and that you may have the ſatisfaction to ſhew your enemies, and all Europe, that the French know how to act, and carry on war, in all ſeaſons, when they have ſuch a general as you are, and a miniſter of the department of war, that can forſee, and concert matters, with the general.

You muſt be ſenſible, Sir, that what I ſay to you may become not only uſeful and honourable, but perhaps even neceſſary, with reſpect to what you know, and of which I ſhall ſay more in my private letter.

M. Duc de Belleiſle.

MINE, in natural hiſtory, a place under ground, where metals, minerals, or precious ſtones, &c are dug up.

For gold and ſilver mines, the richeſt and moſt celebrated are in the Spaniſh Weſt-Indies: iron mines are more abundant in France; copper mines are chiefly in Sweden and Denmark; lead and tin mines abound moſt in England; quickſilver mines in Hungary and Spain; diamond mines in Golconda; ſalt mines in Polland, &c.

Metallic-MINES are generally dug for in mountains, though it is probable plains may abound as much therewith, but theſe are commonly cultivated; beſides this, the waters will ſcarce allow them to dig: and as the metallic veins always run either horizontal or oblique, they are eaſieſt found on the ſides of eminences. The metallic veins are commonly encompaſſed with a ſort of ſtone peculiar to the mine, and accompanied with ſeveral ſtrata of clay, gravel, rock, &c. By all theſe the miners know when they approach a vein. They diſcover that there is a mine in a mountain by the mineral ſtones that fall from it, the mineral taſte of the waters, the quality of the exhalations, the difference between the earth over the mines, and that of the neighbouring parts; the firſt freezing on the adjacent places, when it thaws about the mines. Add to this, that the ground producing but little graſs, and that but pale, is an indication of a mine.

MINE, in the military art, denotes a ſubterraneous canal or paſſage, dug under the wall or rampart of a fortification, intended to be blown up by gun-powder. The alley or paſſage of a mine is commonly about four feet ſquare; at the end of this is the chamber of the mine, which is a cavity about five feet in width and in length, and about ſix feet in height; and here the gun-powder is ſtowed. The sauciſſe of the mine is the train, for which there is always a little aperture left. There are various kinds of mines, which acquire various names, as royal-mines, ſerpentine-mines, forked-mines, according as their paſſages are ſtraight, oblique, winding, &c. There are alſo mines made in the field, which are called fougades.

MINERAL, in natural hiſtory, in general, denotes foſſil, and is applied to any body dug out of the earth. In this ſenſe minerals are divided into claſſes; the one fuſible and malleable, which are what we properly call metals; the others want theſe two properties, and are what we ſtrictly call minerals.

MINERAL, in a more accurate ſenſe, denotes a compound foſſil, in which there is ſomething diſcovered, in all reſpects like metals, except that it is not malleable, joined with ſome other foſſil, as ſalt, ſulphur, ſtone, or earth ſuch as antimony, cinnabar, biſmuth, &c. Some aſcribe the formation of minerals to the action of the ſun without; ſome to the central fire within; and ſome think the cold does all by condenſing and congealing certain juices of the earth. The minerals, metals, and ſtones, lie in beds ever ſince the flood, if not from the creation: yet it is highly probable they have a faculty of growing in their reſpective beds, as Mr. Boyle thinks. Among other inſtances he adds, that in the foreſt of Dean in Glouceſterſhire, the beſt iron, and in the greateſt quantities, are found in the old cinders, which they melt over again. This ſome impute to the negligence of former melters; but Mr. Derham imagines it rather owing to the new impregnations of the old ore or cinders from the air.

MINERAL *Waters*, in medicine, thoſe wherein any medicinal virtues, beſides thoſe of common water, are found. Theſe mineral waters are of various kinds, but they are conſidered under the general titles of chalybeate, purgative, and alterative. The more uſeful and commodious additions for examining theſe three kinds of mineral waters, are, according to Dr. Shaw; galls, ſyrup of violets, and oil of tartar per deliquium. Galls diſcover in them any ſmall proportion of vitriol or diſſolved iron, as having the property of immediately ſtriking a purple or black colour in all waters, where any ſuch ſubſtance is lodged. Spirits of violet, in the ſame manner, diſcover any ſmall predominancy of an acid, or alkali therein, by changing the water red if acid, and green if alkali preſides. Oil of tartar diſcovers any ſmall proportion of earthy matter leſs capable of diſſolving in water than that ſalt, by precipitating ſuch earthy matter in form of a white cloud to the bottom of the containing glaſs, where it collects and appears like a ſubtile white powder. Theſe particulars may be ſhewn, and proved ſatisfactorily by adding to pure water a little of a known acid alkali, diſſolved iron, and ſubtile earth, or fine light ſediment of an earthy water; applying the ſyrup of violets, galls, and oil of tartar reſpectively.

* MINERVA, or PALLAS, in Pagan worſhip, the goddeſs of ſciences and wiſdom, ſprung completely armed from Jupiter's brain, and on the day of her nativity it rained gold at Rhodes. She diſputed with Neptune the honour of giving a name to the city of Athens, when it was agreed between them that whoſoever of them ſhould produce what was moſt uſeful to mankind, ſhould have that advantage. Neptune, with a ſtroke of his trident, formed a horſe; and Minerva cauſed an olive to ſpring from the ground, which was judged to be moſt uſeful, from its being the ſymbol of peace. Minerva changed Arachne into a ſpider, for pretending to excel her in making tapeſtry. She fought the giants, favoured Cadmus, Ulyſſes, and other heroes, and refuſed to marry Vulcan, chuſing rather to live in a ſtate of celibacy. She alſo deprived Tireſias of ſight, turned Meduſa's locks into ſnakes, and performed ſeveral other exploits. Minerva is uſually repreſented by the poets, painters, and ſculptors, completely armed, with a compoſed but agreeable countenance, bearing a golden breaſt-plate and a ſpear.

MINIATURE, a delicate kind of painting, diſtinguiſhed from all others by the ſmallneſs of the figures; by the faintneſs of the colouring; and by its being uſually done on vellum.

MINIM, in muſic, a note equal to two crotchets, or half a ſemibreve.

MINIMS, a religious order in the church of Rome, founded by St. Francis De Paula, towards the end of the fifteenth century. Their habit is a coarſe black woollen ſhift, with a woollen girdle, of the ſame colour, tied in five knots. They are not permitted to quit the habit and girdle night nor day. Formerly they went bare-footed, but are now allowed the uſe of ſhoes.

MINIMUM, in mathematics, the leaſt quantity attainable in any given caſe. The common methods of reſolving problems relating to the minima, are the ſame with thoſe we have ſhewn under the article MAXIMUM.

MINION, a piece of cannon, at preſent but little uſed in the field. For its length, bore, and the weight of the ball it carries. See *Cannon*.

MINIUM, red lead, a preparation of lead uſed both in pharmacy and painting. Minium is generally prepared from lead calcined into a greyiſh powder by keeping it melted over the fire. This powder, ground in mills, is further calcined, in a reverbatory furnace, under a low arch, and frequently ſtirred with an iron rake, to prevent its melting and running into clots, and to expoſe a freſh ſurface to the action of the air and flame. The calcination laſts two or three days. The increaſe of weight is ſaid to amount to one fourth the weight of the lead; and the lead recovered from the minium to be one twentieth leſs than the original weight of the metal. If the minium be further calcined, the increaſe is no more; but the quantity of lead recoverable proves leſs

leſs in proportion to the vehemence and continuance of the calcination. The largeſt quantities of minium are made at Venice, and in England. The Venetians employ for the beſt ſort, ceruſſe, or white lead: for the middling ſort, the refuſe plates of lead remaining after the making of ceruſſe; the worſt kind is prepared from litharge. See *Lead*, *Litharge*, &c.

MINOR, in law, an heir, either male or female, before they arrive at the age of twenty-one; during the minority of ſuch, they are uſually incapable of acting for themſelves.

Minor, in logic, the ſecond propoſition of a regular ſyllogiſm. See *Syllogiſm*.

Minor, in muſic, ſignifies leſs, and is applied to certain concords or intervals, which differ from others of the ſame denomination by half a tone.

MINOTAUR, *Minotaurus*, in antiquity, a fabulous monſter much talked of by the poets, feigned to be half man and half bull. The minotaur was brought forth by Paſiphae, wife of Minos, king of Crete. It was ſhut up in the labyrinth of that iſland, and at laſt killed by Theſeus.

MINT, the place where the king's money is coined

Mint. See *Mentha*.

MINUET, in muſic, a graceful kind of dance, which conſiſts of a coupee, a high ſtep, and a ballance; it begins with a beat, and its motion is triple.

MINUTE, in geometry, the ſixtieth part of a degree of a circle.

Minute *of Time*, the ſixtieth part of an hour.

Minute, in architecture, uſually denotes the ſixtieth, ſometimes the thirtieth part of a module. See *Module*.

MIRACLE, a work effected in a manner different from the common and regular method of Providence, by the interpoſition either of God himſelf, or ſome intelligent agent ſuperior to man.

MIRROR, *Speculum*, in catoptrics, any poliſhed body impervious to the rays of light, and which reflects them equally. Mirrors were anciently made of metal; but at preſent are generally ſmooth plates of glaſs, tinned or quick-ſilvered on the back part, and called looking-glaſſes. See *Looking Glaſs*. The doctrine of mirrors depends wholly on that fundamental law, that the angle of reflection is always equal to the angle of incidence.

The properties of cylindrical mirrors are, 1. The dimenſions of objects correſponding lengthwiſe to the mirror are not much changed; but thoſe correſponding breadthwiſe have their figure altered and their dimenſions leſſened the farther from the mirror; whence ariſes a very great diſtortion. 2. If the plane of the reflection cut the cylindric mirror through the axis, the reflection is performed in the ſame manner as in a plane mirror; if parallel to the baſe, the reflection is the ſame as in a ſpherical mirror; if it cut it obliquely, the reflection is the ſame as in an elliptic mirror. Hence, as the plane of reflection never paſſes through the axis of the mirror, except when the eye and objective line are in the ſame plane; nor parallel to the baſe, except when the radiant point and the eye are at the ſame height; the reflection is therefore uſually the ſame as in an elliptic one. 3. If a hollow cylindric mirror be directly oppoſed to the ſun, inſtead of a focus or a point, the rays will be reflected into a lucid line parallel to its axis, at a diſtance ſomewhat leſs than a fourth of its diameter. Hence ariſes a method of drawing anamorphoſes, that is, wild deformed figures on a plane, which appear well proportioned, when viewed in a cylindric mirror. In an elliptic mirror, if a ray ſtrike on it from one of its focuſes, it is reflected into the other. In parabolic mirrors, as all the rays they reflect meet in one point, they make the beſt burning-glaſſes.

MISDEMEANOUR, in law, a heinous offence or fault, particularly in the execution of an office.

MISLETOE, in botany, a buſhy evergreen plant; with woody branches variouſly interwoven; firm narrow leaves, narroweſt at the bottom, ſet in pairs; and imperfect white flowers in their boſoms, followed each by a tranſparent white berry, containing a ſingle ſeed. It grows only on the trunks and branches of trees, and may be propagated by rubbing the glutinous berries on the bark that the ſeeds may adhere.

The leaves and branches of miſletoe, formerly recommended as ſpecifics in convulſive and other nervous diſorders, and now fallen into general neglect, do not appear to have any conſiderable medicinal power.

MISPRISION, in a general ſenſe, ſome neglect or overſight, as where a perſon is privy to a treaſon or felony, committed by another, and neglects to reveal it to the king or his council, or to a magiſtrate, but entirely conceals them; this is called miſpriſion of thoſe crimes. In caſes of miſpriſion of treaſon, the offender is to be impriſoned for life, and to forfeit his goods and chattels, together with the profits of his lands, &c. but in miſpriſion of felony, the offender is only to be puniſhed with fine and impriſonment, and to remain in priſon till the fine is paid.

MISSAL, the Romiſh maſs-book, containing the ſeveral maſſes to be ſaid on particular days.

MISSEL-BIRD, in zoology the common Engliſh name of the larger ſpecies of thruſh, called alſo the ſhrite, and by authors the turdus viſcivorus major. It is much larger than any other of the thruſh kind. Its legs and feet are yellow; its head of a browniſh lead colour; and its back, tail, and rump, of the ſame colour, with an admixture of yellow; but in the ſummer months it a little changes its colour, and becomes more grey, or of the colour of unripe pickled olives; its throat, breaſt, and belly, are all variegated with black ſpots; the middle of its belly whitiſh, and the upper part of its breaſt, and part of its ſides, and the under feathers of its tail yellowiſh. *Ray's Ornithology.*

MISSIONARIES, eccleſiaſtics ſent by any Chriſtian church into pagan or infidel countries, to convert the natives, and eſtabliſh the Chriſtian religion among them.

* MISSISSIPPI, or the river of St. Louis, is one of the largeſt rivers in the world. Its ſource is unknown, for it has not been navigated higher than three hundred miles below the fall or cataract of St. Anthony, and there it is thirty fathoms deep, though at the diſtance of two thouſand four hundred miles from its mouth. It diſcharges itſelf into the ſea by three mouths, and, like the Nile, has periodical innundations, by the melting of ſnow in the north, ſo that in May it overflows the country on each ſide, from ſixty to ninety miles, and the inundation continues till near the end of July. Its inundations always leave a great quantity of mud upon the land, and ſometimes carry down trees to the river's mouth, where they form new iſlands, and render the entrance difficult.

MISSIVE, ſomething ſent to another, as miſſive letters, meaning letters ſent from one to another upon buſineſs, in contradiſtinction to letters of gallantry, points of learning, diſpatches, &c.

MIST, ſee *Fog*.

MITE, a ſmall coin formerly current, equal to about one third part of a farthing.

MITHRIDATE, *Mithridatium*, in pharmacy, an antidote, in form of an electuary, chiefly againſt poiſon. It is ſo called from its inventor Mithridates king of Pontus; though its preſent form is different from what he made it. It is one of the capital officinals, conſiſting of a vaſt number of ingredients, many of which might have been better left out, as they bear no affinity to the main deſign of the whole. Mithridate is greatly uſed as a cordial, an opiate, and a ſudorific. Its doſe is from one ſcruple to two drachms, and is a much better medicine, as a cordial and alexipharmic, than the Venice treacle.

MITRALES - VALVULÆ, *Mitral Valves*, in anatomy, two valves ſituated in the left ventricle of the heart, at the ingreſs of the pulmonary vein, ſerving to hinder the ingreſs and regreſs of the blood from the heart into the veins again, while they are conſtricted.

MITRE, a ſacerdotal ornament worn on the head by biſhops and certain abbots, on ſolemn occaſions; being a ſort of a cap, pointed and cleft at top.

MITTIMUS, as generally uſed, hath two ſignifications: 1. It ſignifies a writ for removing and transferring of records from one court to another. 2. It alſo ſignifies a precept or command in writing, under the hand and ſeal of a juſtice of the peace, directed to the gaoler or keeper of ſome priſon, for the receiving and ſafe keeping of an offender charged with any crime, until he be delivered by courſe of law.

MIXT, or MIXT BODY, in philoſophy and chemiſtry, that which is compounded of different elements or principles; in which ſenſe it ſtands contradiſtinguiſhed from ſimple or elementary, which is applied to bodies conſiſting of one principle only, as the chemiſts take ſulphur, ſalt, &c. to do. The buſineſs of chemiſtry is, to reſolve mixt bodies into their principles, or component parts.

MIXT ACTION, in law, an action partly real and partly perſonal, which lies both for the thing detained, and againſt the perſon of the detainer. See *Action*.

MIXTURE, a compound, or aſſemblage of ſeveral different bodies in the ſame maſs.

MIZEN, the aftmoſt or hindmoſt ſtanding ſail in a ſhip of three maſts. We ſay ſtanding ſail, becauſe there can occaſionally be ſet ſeveral flying ſails behind it, as the driver, ringſail, &c.

MIZEN-MAST, the maſt on which

the mizen is faſtened, which is the aftmoſt or hindmoſt in the ſhip.

MOAT, or DITCH, in fortification, a deep trench dug round the rampart of a fortified place, to prevent ſurprizes. The brink of the moat, next the rampart, is called the ſcarpe, and the oppoſite one, the counterſcarpe. A dry moat round a large place, with a ſtrong garriſon, is preferable to one full of water; becauſe the paſſage may be diſputed inch by inch, and the beſiegers, when lodged in it, are continually expoſed to the bombs, grenades, and other fire-works, which are thrown inceſſantly from the rampart into their works. In the middle of dry moats, there is ſometimes another ſmall one, called cunette; which is generally dug ſo deep, till they find water to fill it. The deepeſt and broadeſt moats are accounted the beſt, but a deep one is preferable to a broad one: the ordinary breadth is about twenty fathoms, and the depth about ſixteen. To drain a moat that is full of water, they dig a trench deeper than the level of the water, to let it run off; and then throw hurdles upon the mud and ſlime, covering them with earth or bundles of ruſhes, to make a ſure and firm paſſage.

MODE, or MOOD *of Syllogiſms*, among logicians. See *Syllogiſm*.

MODE, in muſic, the particular order of the concinnous degrees of an octave, the fundamental note whereof may be called the key, as it ſignifies that principal note which regulates the reſt. The proper difference, therefore, between a mode and a key is this, that an octave, with all its natural and concinnous degrees, is called a mode, with reſpect to the conſtitution or manner of dividing it; and, with reſpect to its place in the ſcale, it is called a key.

MODERATOR, in the ſchools, the perſon who preſides at a diſpute, or in a public aſſembly: thus the preſident of the annual aſſembly of the church of Scotland is ſtiled moderator.

MODERN, ſomething new, or of our time, in oppoſition to what is antique or ancient.

MODIFICATION, in philoſophy, that which modifies a thing, or gives it this or that manner of being. Quantity and quality are accidents which modify all bodies. According to Spinoſa's ſyſtem, all the beings that compoſe the univerſe are only ſo many different modifications of one and the ſame ſubſtance; and it is the different arrangement and ſituation of their parts that make all the difference between them.

MODILLIONS, in architecture, ornaments in the corniche of the Ionic, Corinthian, and Compoſite columns.

The modillions are little inverted conſoles, or brackets, in form of an S under the ſoffit of the corniche, ſeeming to ſupport the projecture of the larmier; tho' in reality they are no more than ornaments.

MODULATION, in muſic, the art of keeping in, or changing the mode or key.

MODULE, in architecture, a certain meaſure or bigneſs, taken at pleaſure, for regulating the proportions of columns, and the ſymmetry, or diſpoſition of the whole building. Architects generally chooſe the ſemi-diameter of the bottom of the column for their module, and this they ſubdivide into parts or minutes. The module of Vignola, which is a ſemi-diameter, is divided into twelve parts in the Tuſcan and Doric, and into eighteen for the other orders. The module of Palladio, Scamozzi, M. Cambray, Deſgodetz, Le Clerc, &c. which is alſo equal to the ſemi-diameter, is divided into thirty parts or minutes in all the orders. The whole height of the column is divided by ſome into twenty parts for the Doric, twenty-two and a half for the Ionic, twenty-five for the Roman, &c. and one of theſe parts is made a module to regulate the reſt of the building by. There are two ways of determining the meaſures, or proportions of buildings. The firſt is by a fixed ſtandard-meaſure, which is uſually the diameter of the lower part of the column, called a module, ſubdivided into ſixty parts, called minutes. In the ſecond there are no minutes, nor any certain or ſtated diviſion of the module, but it is divided occaſionally into as many parts as are judged neceſſary: thus the height of the Attic baſe, which is half the module, is divided either into three, to have the height of the plinth, or into four, for that of the greater torus; or into ſix, for that of the leſſer. Both theſe manners have been practiſed by the ancient as well as the modern architects, but the ſecond, which was that chiefly uſed among the ancients, is, in the opinion of M. Perault, the preferable. As Vitruvius has leſſened his module in the Doric order, which is the diameter of the lower part of the other orders, and has reduced that great module to a mean one, which is the ſemi-diameter, the module is here reduced to the third part for the ſame reaſon, viz. to determine the ſeveral meaſures without a fraction. For in the Doric order, beſides that the height of the baſe, as in the other orders, is determined by one of thoſe mean modules, the ſame module gives likewiſe the height of the capital, architrave, triglyphs, and metopes. But our little module, taken from the third of the diameter of the lower part of the column, has uſes much more extenſive; for by this the height of the pedeſtals or columns and entablatures in all the orders are determined without a fraction. As then the great module or diameter of the column has ſixty minutes, and the mean module, or half the diameter, thirty minutes, our little module has twenty.

MOERHINGIA, moſſy chickweed, in botany.

MOHAIR, in commerce, a kind of ſtuff made of ſilk and hair.

MOINEAU, in fortification, a flat baſtion raiſed between two other baſtions, when a re-entering angle before a curtain is too long. The moineau is commonly joined to the curtain, but it is ſometimes ſeparated from it by a foſs, in which caſe it is called a detached baſtion. The moineau is not raiſed ſo high as the works of the place, becauſe it ought to be expoſed to the fire of the place in caſe the enemy ſhauld lodge themſelves in it.

MOISTURE, a term ſometimes uſed to denote animal fluids, the juices of plants, or dampneſs of the air or other bodies.

Radical MOISTURE, among phyſicians, a vital fluid, which nouriſhes and maintains life, as oil does a lamp. However, Dr. Quincy obſerves, that ſuch a fluid is a mere chimera, unleſs we thereby mean the maſs of blood.

MOLARES, or DENTES MOLARES, in anatomy, the large teeth, called in Engliſh grinders.

MOLE, *Talpa*, in zoology, makes a genus of quadrupeds, of the order of the feræ, thus characteriſed: the feet are formed like hands, and calculated for digging; and it has no external ears. Of this genus there are two ſpecies: 1. The common mole, a well-known little animal, of a bluiſh black colour; very miſchievous to the farmers, by turning up the ground of their paſtures. 2. The pointed tail-leſs mole, ſomewhat larger than the common kind: it is of a mixed colour, in which a purpliſh and yellowiſh tinge ſeem the prevailing ones. It is a native of Aſia, and lives under ground, like the common mole.

MOLE, *Mola carnea*, in medicine, a maſs of fleſhy matter, of a ſpherical figure, generated in the uterus, or womb, and ſometimes miſtaken for a child. Its ſize is various, from that of a large nut to that of a fœtus. Some moles are ſoft and ſpongy, and others membranous, with a cavity in the middle. Sometimes they are filled with ſerous matter, and ſometimes with hydatides. The ſymptoms of a mole, at firſt, are like thoſe of a real pregnancy; but afterwards they vary; for the woman feels a dull heavy weight, like that of a ball of lead; her belly being round and ſpherical, without any motion like that of a living fœtus. The mole itſelf threatens no danger, the difficulty lying in being delivered of it. Some women are troubled with them for ſeveral years, and others all their life, without any other inconvenience than uneaſineſs and weight. The cure conſiſts in expelling the mole; for which purpoſe the aſſiſtance of an expert midwife or ſurgeon becomes neceſſary. If the mouth of the uterus ſhould be too ſtrongly contracted to admit the hand of the operator, it is proper to excite the woman's throws by briſk cathartics and ſtrong clyſters; while the os uteri, and parts adjacent, are in the mean time gradually relaxed by the application of emollient fomentations, &c. which done, one or two of the fingers are to be firſt gently inſinuated, and then the whole hand by degrees, in order to extract the mole, as directed for the fœtus. See *Delivery*. If the mole adheres to the uterus, as it frequently does, it is to be gently ſeparated before extraction; and if it be too large to be got out entire, it may be carefully ſeparated and extracted in pieces, either with the fingers, or a falciform hook. To conclude, ſays Heiſter, if a mole does not occaſion any bad ſymptoms, or uneaſineſs in the mother, and its extraction appears difficult, no violence ſhould be uſed: ſince we have many inſtances of moles retained in the uterus, without any great detriment to the patient, as long as they lived.

MOLE, *Moles*, is alſo a maſſive work of large ſtones laid in the ſea by means of coffer-dams; extending before a port, either to defend the harbour from the impetuoſity of the waves, or to prevent the paſſage of ſhips without leave.

MOLE, a ſort of harbour, wherein

ſhipping may ride ſheltered from the winds and ſeas: it is formed by erecting a mole-head; theſe are not frequent in Great Britain or Ireland, but are more common in the Mediterranean, as Leghorn-mole, Algiers-mole, Alexandria-mole, &c.

MOLE-HEAD, a ſort of pier, mound, or artificial iſthmus, built athwart the outer part of a little bay, and joining to ſome head or iſland, to form a retreat for ſhipping.

MOLE-HILLS, theſe little hillocks of earth are a very great prejudice to the paſture lands, not only waſting ſo much of the land as they cover, but hindering the ſcythe in mowing. In the Weſt of England they uſe a peculiar inſtrument for the breaking up of theſe; in other places a ſpade, or other common inſtrument; and in others a kind of horſe-machine, which will deſtroy as many in one day as a common labourer in eight.

* MOLIERE (JOHN BAPTIST POCQUELIN DE) a celebrated French dramatic poet, who excelled all the comic poets of that nation, was born at Paris in 1620. His father was upholſterer to the king, and obtained for him the ſurvivorſhip of his poſt: but his grandfather taking him ſometimes to the play, he conceived ſuch an averſion to his own trade, that he deſired his grandfather to prevail with his parents to give him a taſte of literature, to which his father conſented, and he was put to a college of Jeſuits, where he became acquainted with Armand de Bourbon, firſt prince of Conti, and with Chappelle and Bernier, who ſtudied in the ſame college. He at length reſolved to apply himſelf entirely to the ſtage, to which he had a very ſtrong inclination; and having formed a company of ſome young men, who had a talent for declamation, they played at Paris, and took the name of The Illuſtrious Theatre. Pocquelin then aſſumed the name of Moliere, and wrote ſome ſhort comedies to be acted in the country. The firſt regular piece he compoſed was the *Etourdi*, or *Blunderer*, of five acts, which was performed at Lyons in 1653, and he alſo played the *Dépit Amoureux*, and the *Précieuſes Ridicules*, before the prince of Conti at Beziers. After viſiting ſeveral other places, he returned to Paris; he then played in the guard-room of the old Louvre, and was afterwards allowed to act in the royal palace. In 1663 he had a penſion of 1000 livres, and two years after his company was taken into the king's ſervice; when Moliere introduced a true taſte for comedy on the French theatre, and laſhed the vices and follies of the age. He was a good actor, as well as an excellent poet. Molliere uſed to read his comedies to an old ſervant-maid of his, and when any of the comic paſſages made little or no impreſſion upon her, he altered them, being convinced by experience, that unleſs ſhe laughed, they would not take upon the ſtage. His death was very ſurpriſing: being to act *Le malade imaginaire*, that is, The imaginary ſick man, he was taken ſo ill before it began, that he was adviſed to put it off; but conſidering the number and dignity of the ſpectators, he was unwilling to ſend them away, and acted his part with ſuch intenſeneſs, that he did not perceive the increaſe of his illneſs; but when he came to that part of the play, in which he was to counterfeit being dead, he was ſo weak, that it was thought he had really expired; and as they had much difficulty to make him ſtand up, they adviſed him to withdraw; but the play being far advanced, he thought he could go through it without further prejudice; but as he was ſpeaking of rhubarb and ſenna in the conſultation of phyſicians, the blood iſſued out of his mouth; when being carried home, and all medicines proving ineffectual, he died the ſame evening of an effuſion of blood, the 13th of February 1643, aged 53. Moliere being a player, there was great difficulty in obtaining permiſſion from the archbiſhop of Paris to inter his body in conſecrated ground.

MOLLUGO, baſtard madder, in botany.

* MOLOCH, in Pagan worſhip, a famous god of the Ammonites, to whoſe idol they ſacrificed children and animals. It is ſaid to have been half the body of a man with the head of a calf, and the arms extended. This half body was fixed on a kind of hearth, on which was lighted a great fire, through which children were obliged to paſs, in order to be purified by that ceremony, when, to prevent their cries being heard, a great noiſe was made with drums and other inſtruments. The holy ſcripture frequently reproaches the Jews for offering theſe kind of ſacrifices to Moloch.

MOLOSSES, in commerce, the thick fluid matter remaining after the ſugar is made, reſembling ſyrup. See *Sugar*.

MOLOSSES, in Greek and Latin

poetry, a foot compoſed of three long ſyllables, as *delectant*.

MOLTING, the change of feathers, hair, or horns, in birds and beaſts.

MOLLUCCA-BEANS, *Molluccella*, in botany, a genus of plants.

* MOLWITZ, Battle at. In the year 1741, when half the powers in Europe were buſying themſelves about the election of an emperor, Frederic III. the preſent king of Pruſſia, who ſaw the general confuſion, marched an army of 60,000 men directly into Sileſia. His pretenſions were to four duchies, which his family had formerly acquired by purchaſes, and by acts of confraternity, which his anceſtors not being able to maintain, had been obliged to relinquiſh. The queen of Hungary was incenſed to find herſelf attacked in the day of her diſtreſs by a prince to whom ſhe had given no ſort of provocation; and his Pruſſian majeſty charged the court of Vienna with a deſign either to aſſaſſinate or carry him off by treachery: a deſign which was diſowned with expreſſions of indignation and diſdain, and which was founded in no other place than his own imagination. Both parties were now inflamed. The queen ordered count Neuperg to aſſemble a body of forces, and ſtop the progreſs of the Pruſſians in Sileſia. Accordingly on Monday the 10th day of April 1741, the two armies met at Molwitz. The engagement began about two'clock in the afternoon. The Auſtrians at firſt drove back the left wing of the Pruſſians, commanded by lieutenant-general Schuylemberg. But his Pruſſian majeſty having been informed that the Auſtrians were ſuperior to him in cavalry, had intermixed grenadiers with his horſe, by which means this confuſion was recovered. The attack on the right wing of the Pruſſians was likewiſe very intrepid; but the heat of the action was on the left wing, which having been rallied, now repulſed the Auſtrians in turn, and purſued their advantage ſo well, that at ſix o'clock they began to retire, and made a retreat in very good order, and encamped under the cannon of Neiſs, leaving the field of battle to the king, who dearly purchaſed this ſpot of ground. He loſt at leaſt three thouſand men, beſides his kinſman Frederic margrave of Brandenburgh, and lieutenant-general Schuylemberg. The loſs of the Auſtrians, as they were defeated, muſt have been greater than that of the Pruſſians, though they endeavoured to conceal it; therefore there is no aſcertaining it exactly; but according to all probability, it could not be leſs than four thouſand. Notwithſtanding the king of Pruſſia remained maſter of the field of battle, the action was far from being deciſive. The Auſtrians faced the Pruſſians ſeveral times in their camp, and frequent ſkirmiſhes happened. The neceſſitous affairs of the queen of Hungary at length obliged general Neuperg to be recalled with his army. The king of Pruſſia then made a conqueſt of Sileſia, for there was no oppoſition.

MOMENT, in the doctrine of time, an inſtant, or the moſt minute and indiviſible part of duration. Strictly ſpeaking, however, a moment ought not to be conſidered as any part of time, but only as the termination or limit thereof.

MOMENT, in the doctrine of infinites, denotes the ſame with infiniteſimal. See *Infiniteſimal*.

Leibnitz, and other foreigners, call theſe moments differences.

MOMENT, *Momentum*, in mechanics, the ſame with impetus, or the quantity of motion in a moving body; which is always equal to the quantity of matter, multiplied into the velocity; or, which is the ſame thing, it may be conſidered as a rectangle under the quantity of matter and velocity.

MOMORDICA, the wild cucumber, in botany, a genus of plants which comprehends the momordica and luffa of Tournefort, and the elaterium of Boerhave; and indeed the elaterium of the ſhops, a violent purge, is the fruit of this plant.

* MOMUS, in fabulous hiſtory, the god of raillery, or the jeſter of the celeſtial aſſembly, and was the ſon of Somnus and Night. He ridiculed both gods and men. Being choſen by Vulcan, Neptune, and Minerva, as a judge of the excellence of their performances, he blamed them all three. Neptune for not placing the horns of the bull before his eyes, that he might give the ſurer blow, or in his ſhoulders, that he might give it with greater ſtrength: he cenſured Minerva for not having rendered her houſe moveable, that it might be taken away when placed in a bad neighbourhood; and Vulcan, for not having made a window in the breaſt of the man, by which his heart might be ſeen, and his moſt ſecret thoughts diſcovered.

MONADELPHIA, in botany, a claſs of plants, the ſixteenth in order, ſo called

led becauſe the ſtamina are connected, or coaleſce at the baſe. See BOTANY.

MONANDRIA, in botany, a claſs of plants, the firſt in order, with only one ſtamen, or male part in each flower.

The monandria are ſubdivided into two orders, which are denominated monandria-monogynia. and monandria-digynia, according as they contain one or two ſtyles.

MONARCHY, a government in which the ſupreme power is veſted in a ſingle perſon. There are ſeveral kinds of monarchies, as where the monarch is inveſted with an abſolute power, and is accountable to none but God. It is an error to ſuppoſe, that a deſpotic or abſolute monarch is a ſoleſciſm in politics, and that there can be none ſuch legally; for the contrary is true, and that in different parts of the world, and from various principles. In China it is founded on paternal authority, and is the baſis of the government; in Turky, Perſia, Barbary, and India, it is the effect of relegion: and in Denmark, the king is legally abſolute by the ſolemn ſurrender which the people made to his predeceſſor of their liberties. Another kind of monarchy is that which is limited, where the ſupreme power is virtually in the laws, though the majeſty of government, and the adminiſtration, is veſted in a ſingle perſon. Monarchies are alſo either hereditary, where the regal power deſcends immediately from the poſſeſſor to the next heir by blood; or elective, where the choice depends upon all who enjoy the benefit of freedom, as in Poland; or upon a few perſons in whom the conſtitution veſts the power of election, as in the German empire. See KING and GOVERNMENT.

MONASTERY, a convent or place for the reception and entertainment of monks, mendicant friars, or nuns, whether it be an abby, priory, &c. Monaſteries are governed by different rules, according to the different regulations preſcribed by their founders. The firſt regular and perfect monaſteries were founded by St. Pachomius, in Egypt; but St. Baſil is generally conſidered as the great father and patriarch of the eaſtern monks; ſince in the fourth century he preſcribed rules for the government of the monaſteries, to which the Anachorets, and Cœnobites, and the other ancient fathers of the deſart ſubmitted. In like manner St. Benedict was ſtiled the patriarch of the weſtern monks: he appeared in Italy towards the latter end of the fifth century, and publiſhed his rule, which was univerſally received throughout the Weſt. St. Auguſtine being ſent into England by St Gregory the pope, in 596, to convert the Engliſh, he at the ſame time introduced the monaſtic ſtate into this kingdom, which made ſuch progreſs here, that within the ſpace of two hundred years, there were thirty kings and queens who preferred the religious habit to their crowns, and founded ſtately monaſteries, where they ended their days in ſolitude and retirement.

MONASTIC, belonging to monks. See MONK.

MONDAY, *Dies Lunæ*, the ſecond day of the week, ſo called as being anciently ſacred to the moon, q. d. moon-day.

MONEY, *Moneta*, a piece of matter, commonly metal, to which public authority has affixed a certain value and weight, to ſerve as a medium in commerce.

The æra of the invention of money is not eaſily to be ſettled. There is no room to doubt but that in the earlieſt ages the ordinary traffic among men, was by trucking or exchanging one commodity for another; but in the courſe of time it was found neceſſary, in the way of commutative juſtice, to have ſome common meaſure or ſtandard, according to which all things ſhould be eſtimated. See EXCHANGE.

By the 13. Geo. III. c. 71, for the better preventing the counterfeiting, clipping, and diminiſhing the gold coin, it is enacted, that any perſon to whom gold money ſhall be tendered, any piece whereof ſhall be diminiſhed otherwiſe than by reaſonable wearing, or by the impreſſion, colour or weight thereof, he ſhall ſuſpect to be counterfeit, may cut or deface ſuch piece; and if any piece ſo cut, broken, or defaced, ſhall appear to be diminiſhed, otherwiſe than by reaſonable wearing, or a counterfeit, the perſon tendering the ſame ſhall bear the loſs thereof; but if the ſame ſhall be of due weight, and appear to be lawful money, the perſon that cut or defaced the ſame, muſt receive it at the rate it was coined for.

Money is uſually divided into real and imaginary. Real money includes all coins whether of gold, ſilver, copper, or the like; ſuch as guineas, crowns, piſtoles, pieces of eight, ducats, &c.

Imaginary money, or money of account, is that which has never exiſted, or at leaſt, which does not exiſt in real ſpecie; but is a denomination invented or retained to facilitate the ſtating of accounts, by keeping them ſtill on a fixed footing, not to be changed in current coins, which the authority of the ſovereign ſometimes raiſes or lowers, according to the exigences of the ſtate, of which kinds are pounds, livers, marks, maravedies, &c.

Engliſh MONEY *of Account* is the pound, ſhilling, and penny; the firſt and laſt being imaginary money, and exchanges calculated in one of them two: the pound contains twenty ſhillings, and the ſhilling twelve pence.

Scotch MONEY *of Account* is the pound, ſhilling, and penny; the pound containing twenty ſhillings, being equivalent to one ſhilling and eight pence Engliſh; and the ſhilling containing twelve pennies, equal to a penny Engliſh. There is alſo among them an account of marks, the mark being equivalent to one ſhilling one penny and one third of a penny Engliſh: of this laſt kind they had formerly a ſilver coin.

French MONEY *of Account* is in livers, ſols, and deniers, of which twelve deniers make a ſol, and twenty ſols a livre: their exchange is by the crown of three livres, or ſixty ſols.

Dutch MONEY *of Account* is kept at Amſterdam and Rotterdam, the two chief trading places, in guilders, ſtivers, and penins; ſo that though goods are ſold for other ſpecie, ſuch as livre de gros, &c. yet all are reduced to the above denominations for the entries into their books. The exchanges are made with us in ſo many ſhillings to a pound ſterling, though in moſt other places in deniers degroſs.

Spaniſh MONEY *of Account* is at Cadiz kept in rials of plate and its fractions; at Caſtile, in maravedies; at Valentia, in livers and dollars, ſueldoes and dineros; of which laſt twelve make a ſueldo, and twenty ſueldos a liver or dollar. Seventeen quartos at Cadiz and Caſtile make two rials vellon, which is now an imaginary coin, though formerly it was the principal one of the kingdom. A maravedie is another imaginary ſpecie, of which ſeventeen is reckoned to a rial vellon. The ducat is alſo a fictitious coin of eleven rials of plate in purchaſes, ſales, and other mercantile tranſactions, except in exchanges, when it is valued at eleven rials of plate and one maravedie, or 375 maravedies.

Portugueſe MONEY *of Account* is kept in reas or res, making a ſeparation at every hundred, thouſandth, &c. 800 reas go to a moidore.

German and Swiſs MONEY *of Account*, at Coningſberg, Elbing, and Dantzic, accounts are kept in rixdollars and gros, or in Poliſh guilders, gros, and deniers or penins. They exchange on Amſterdam in Poliſh gros for a livre de gros of ſix guilders current money of Amſterdam, and on Hamburg for the rixdolar. At Lubeck accounts are kept in marks, ſchellings, and deniers or penins-lubs, in which their exchanges are made. At Breſlaw, accounts are kept in rixdollars and ſilver gros and penins; in the firſt of which ſpecies exchanges are made on Amſterdam for a certain number of ſtivers, bank money, and on Hamburgh for rixdollars of Breſlaw, againſt rixdollars of Hamburg bank. At Hamburg, accounts are kept in marks, ſchellings, and deniers lubs bank money, by thoſe who have caſh in the bank; but by thoſe who have not, their books are generally kept in rixdollars, ſchellings, and denier current money. At Bremen, accounts are kept in rixdollars and gros, and it exchanges on Amſterdam rixdollars of ſeventy-two gros for rixdollars of fifty ſtivers banco. At Leipſic and Naumbourg, accounts are kept in rixdollars, crowns, gros, and penins. At Berlin, and in all this kingdom, accounts are kept in guilders, gros, and penins. At Zurich, accounts are kept in rixdollars, worth about 4s. 6d. ſterling, at 108 of their creutzers. At Frankfort on the Maine, and Hanau, accounts are kept in rixdollars and cruitzers. At Vienna, accounts are kept in guilders, creutzers, and penins, reckoning eight penins to a creutzer, and ſixty creutzers to a guilder. At Nuremberg and Augſburg, accounts are kept in guilders, creutzers, and hellers; at Leige, in livres, ſols, and deniers.

In the canton of St. Gall, in Switzerland, accounts are kept in guilders, creutzers, and penins; or under the ſame denomination with the coins of the empire. In the canton of Baſil, accounts are variouſly kept, ſome in rixdollars, ſchellings and deniers; ſome in livres, ſchellings, and deniers; ſome in rixdollars, creutzers, and penins; and ſome in guilders creutzers, and penins.

Italian MONEY *of Account*. In the cities of Genoa and Novi, accounts are kept in livres, ſoldi, and denari; or in dollars of 100 ſoldis. At Milan, accounts are kept in livres, ſoldis, and denari, to be counted like pounds, ſhillings, and pence, viz, twelve denaris to a ſoldi, &c. At Rome, accounts are kept in crowns, julios, and bajoches, or grains and quartrins; the crown is divided into ten julios, and the julio into ten bajoches. At Leghorn, accounts are generally kept in dollars, ſoldi, and denari. At Florence, they keep their books and accounts, in crowns, ſoldi, and denari, picoli or current money. At Naples, accounts are kept in ducats, florins, and grains. The accounts in Sicily are kept the ſame as at Naples. At Lucca they keep their accounts in crowns, livres, ſoldi, and denari; the crown is worth 7 livres 10 ſoldi; the livre 20 ſoldi; and the ſoldi 12 denari. At Venice, accounts are kept in livres, ſoldi, and denari, picoli or current; but the bank-entries are in livres, ſoldi, and groſſes: both the current and bank-ducats of Venice make 24 ſoldi, or 6 livers and four ſoldi. At Bologna, accounts are kept in livres, ſoldi, and denari; the livre being 20 ſoldi, and the ſoldi 12 denari. At Bergamo, the money of account is the ſame as at Bologna, and its proportions the ſame At Parma, accounts are kept in crowns, ſoldi, and denari; the crown is 20 ſoldi, and the ſoldi 20 denari. At Modena and Mantua, accounts are kept in livres, ſoldi, and denari. In Savoy and Piedmont, accounts are kept in livres, or livres, ſoldi, and quartrins. At Placentia, accounts are kept in crowns, ſoldi, and denari of mark; of which 12 denari make a ſoldi, and 20 ſoldi the crown. In the iſland of Sardinia, accounts are kept as in moſt parts of Italy, in livres, ſoldi, and denari. In the iſland of Malta, the money of account is the ſame with that of Sicily. In the iſland of Candia, the account is the ſame as at Venice.

Ruſſian, Swediſh, Daniſh, and Poliſh MONEY *of Account.* In the trading places of the Ruſſian empire, accounts are kept in roubles, grives, and moſcoſques, or in roubles and coppecks; 10 coppecks, each of which is equal to two moſcoſques, make a grive, and 100 coppecks, or 10 grives, is a rouble. In the kingdom of Sweden, accounts are kept in dollars, marks, and oorts, the dollar being worth four marks, and the mark eight oorts In Denmark, accounts are kept in marks and ſchellings; the rixdollar is worth ſix marks; the mark, 16 ſchellings; and the ſchelling, three penins. Accounts are kept at Bergen, and in other places in Norway, in Daniſh rixdollars marks, and ſchellings. In Poland, accounts are kept in guilders, gros, and deniers, of which 18 deniers make a gros, and thirty gros a guilder: they here keep accounts alſo in rixdollars and gros, reckoning 90 of the latter to one of the former. At Riga accounts are kept in rixdollars and gros, the former of which ſpecies conſiſts of 90 of the latter.

Turkiſh MONEY *of Account.* The Turks, both in Europe, Aſia, and Africa, account by purſes, either of ſilver or gold, the laſt being only uſed in the ſeraglio, with half purſes of gold, called alſo rizes: the purſe of ſilver is equal to 1500 French livres, or about 65l. ſterling; and the half purſe in proportion: the purſe of gold is 15000 ſequins, equal to 30000 French crowns, or about 3750l. ſterling: this is ſeldom uſed but for preſents to favourites, ſo that a purſe ſimply ſignifies a purſe of ſilver, or 1500 livres. The merchants alſo uſe Dutch dollars, called aſtani or abouquels, with medins and aſpers: the dollar is equal to 35 medins, and the medin to three aſpers; the aſper to a halfpenny ſterling money.

Aſiatic MONEYS *of Account* are as follow. In Perſia they account by the taman, called alſo man and tumein, and dinarbaſti; the taman is compoſed of 50 abaſſis, or 100 mamodies, or 200 chapes, or 10000 dinars; which, accounting the abaſſi on the foot of 18 French ſols, or the dinar on that of a denier, amounts to 3l. 12s. 6d. ſterling the taman. They alſo account by larins, eſpecially at Ormus, and on the coaſt of the Perſian gulph: the larin is equivalent to 11d. ſterling; and on that footing is uſed alſo in Arabia, and through a great part of the Eaſt-Indes.

Chineſe MONEYS *of Account* are the pic, picol, and tael; which, though in effect weights, do likewiſe ſerve as money of account, obtaining in Tonquin as well as China: the pic is divided into 100 catis, ſome ſay 125: the cati into 16 taels, each tael equal to one ounce two drachms: the picol contains 66 ¾ caties; the tael is equivalent to 6s. 8d. ſterling.

Japoneſe MONEYS *of Account* are the ſchuites, cockiens, oebans or oubans, and taels: 200 ſchuites are equal to 500 Dutch pounds, the cockien equal to 10 Low-country pounds, 1000 oebans make 45000 taels.

Mogul MONEY *of Account.* At Surat, Agra, and the reſt of the eſtates of the Great Mogul, they uſe lacres, acrees, or leeths, implying one hundred thouſand; thus a lacre of rupees is 100,000 rupees;

the lacre being nearly on the footing of the tun in Holland, and the million of France.

MONEYS *of Account* of other iſlands and coaſts of India. Throughout Malabar, and at Goa, they uſe tangas, vintins, and pardos-xeraphin; the tanga is of two kinds, viz. of good and bad alloy; hence their cuſtom is to count by good or bad money; the tanga of good alloy is better by one fifth than the bad, ſo that four tangas good being allowed the pardos-xeraphin, there will be required five of the bad; four vintins good make a tanga likewiſe good; fifteen barucos, a vintin; a good baruco is equal to a Portugueſe reo, a French denier, or one thirteenth of a penny ſterling. In the iſland of Java they uſe the ſonta, ſapacou, fardos, and catis: which laſt money, together with the leeth or lacre, is much uſed throughout all the Eaſt-Indies; the ſonta is 200 caxas, or little pieces of that country, hung on a ſtring, and is equal to eleven twelfths of a penny ſterling; five ſontas make the ſapacou. The fardos equal to 2s. 8d. ſterling; the cati contains 20 taels; the tael 6s. 8d. ſterling. There are iſlands, cities, and ſtates of the Eaſt-Indies, whoſe monies of account are not here expreſſed, partly becauſe reducible to ſome of the above-mentioned, and partly becauſe we find no certain conſiſtent account of them.

African MONEY *of Account.* From Cape Verd to the Cape of Good-Hope, all exchanges and valuations of merchandize are made on the foot of the macoute and piece; which, though no monies of account, for thoſe barbarians have no real monies, and therefore need imaginary ones to eſtimate them by, yet ſerve in lieu thereof At Loango de Boirie, and other places on the coaſt of Angola, the eſtimations are made by macoutes; and at Malimbo and Cabindo, on the ſame coaſt, the negroes reckon by pieces: among the firſt the macoute is equal to 10 pieces: ten macoutes make one hundred, which likewiſe gives us a kind of imaginary money to eſtimate any purchaſe, exchange, &c. they fix on the one ſide the number of macoutes required; e. gr. for a negro; ſo that there are ſeveral bargains made for one: ſuppoſe, for inſtance, the ſlave to be fixed at 3500 pieces, this amounts to 350 macoutes in merchandize, they fix the price of each in macoutes. Two Flemiſh knives, e. gr. are accounted one macoute; a copper-baſon, 2 pounds weight three; a barrel of gunpowder, three, &c. For the piece it ſerves in like manner to eſtimate the value of goods, duties, &c. on either ſide: thus the natives require ten pieces for a ſlave; and the Europeans put, for inſtance, a fuſee at one piece, a piece of ſalampours at four pieces, &c. The cities of Barbary and Egypt, whither the Europeans traffick, reckon much after the ſame manner as in the Levant, and the dominions of the Grand Signior; for the reſt, through that vaſt extent of coaſt where we trade for negroes, gold-duſt, elephants teeth, wax, leather, &c. either the inhabitants do not know what money of account is, or, if they have any, it is only what ſtrangers, ſettled among them, have introduced.

MONEYERS, MONEYORS, or MONIERS, officers of the mint, who work and coin gold and ſilver money, and anſwer all waſte and charges.

MONITORY LETTERS, letters of warning and admonition, from an eccleſiaſtical judge, upon information of ſcandals and abuſes, within the cognizance of his court.

MONK, a man who wholly dedicates himſelf to the ſervice of religion, in ſome monaſtery, under the direction of ſome particular ſtatutes and rules. The moſt probable account of the original of the monks is, that in the Decian perſecution, in the middle of the third century, many perſons in Egypt, to avoid the fury of the ſtorm, fled to the neighbouring deſarts and mountains, where they not only found a ſafe retreat, but alſo more time and liberty to exerciſe themſelves in acts of piety and divine contemplations; which ſort of life became ſo agreeable, that when the perſecution was over, they refuſed to return to their habitations again, chooſing rather to continue in thoſe cottages and cells, which they had made for themſelves in the wilderneſs. From that time to the reign of Conſtantine, monachiſm was confined to the hermits, or anachorets, who lived in private cells in the wilderneſs; but when Pachomius had erected monaſteries, other countries preſently followed the example.

MONKEY, *Simia*, in zoology, a numerous genus of quadrupeds of the order of the anthropomorpha, or quadrupeds that reſemble the human figure: their face is naked; the claws are rounded and flattiſh, in ſome degree like the nails on the human hand; and they have both an upper and lower eye-lid. Of all the animals of the monkey-kind, the ſatyr reſembles mankind moſt; its face is naked, and is very like that of an aged man; it has no tail, and in other reſpects greatly reſembles the human form. The moſt like, next to this, is the oran-outang, or black faced monkey, called the ſavage; and the next to this is the baboon, or whiſkered-ſimia, with a ſhort tail; the reſt of the monkeys, of which there are a great many kinds, differing widely both in ſize and figure, have nevertheleſs ſomething of the human aſpect; and as they are tractable animals, people make them walk erect with a ſtaff, and perform many tricks, to ſhew their reſemblance; but, in general, ſuch monkeys as have no tails, have more of this likeneſs than thoſe which have.

* MONMOUTH, the capital town of Monmouthſhire, a very ancient place, and at this day very conſiderable. It had a ſtately caſtle, wherein Henry V. who conquered France, was born, but it is now gone to ruin. It is governed by two bailiffs, fifteen common council, and a town clerk. It has a market on Saturdays, and three fairs on Whitſunday, and September 4, for horned cattle, and on November 22, for horned cattle, fat hogs, and cheeſe. It was formerly walled round, but now there is little remaining, except three gates. It conſiſts of two pariſhes. It is ſeated on the river Wye, over which is a ſtone bridge of two arches, beyond which there is a ſuburb half a mile long. It ſends one member to parliament, and is twenty-five miles weſt of Glouceſter, and one hundred and twenty-nine weſt of London. Long. 2. 30. W. Lat. 51. 47. N.

* MONMOUTHSHIRE, a county, in the dioceſe of Landaff, formerly a Welch county, it being on the borders of Wales. It is bounded on the north-eaſt by Herefordſhire, on the ſouth-eaſt by the Severn, which parts it from Glouceſterſhire and Somerſetſhire, and on the weſt by Brecknock and Glamorganſhire. It is thirty-three miles in length, and twenty-two in breadth. It is a pretty plentiful country, for it not only has a competency for its inhabitants but ſends ſupplies to its neighbouring counties. The eaſt part abounds with paſtures and woods, but the weſt parts is mountainous and rocky. Its principal rivers are the Rimney, the Ebwith, the Uſk, and the Wye. There are one hundred and twenty-ſeven pariſh churches in the county, and it ſends three members to parliament, two for the county and one for Monmouth.

MONOCHORD, a muſical inſtrument, compoſed of one ſtring, uſed to try the variety and proportion of ſounds.

MONOECIA, in botany, one of Linnæus's claſſes of plants, the twenty-firſt in order; in which the male and female flowers are placed ſeparately on the ſame plant, or rather on different ſtalks growing from the ſame root.

Of the plants belonging to this claſs, ſome have only one ſtamen, and others have three, four, five, ſix, or more ſtamina; whence the ſubordinate orders of monoecia-monandria, monoecia-triandria, &c. others again are monadelphous, others ſyngeneſious, and others gynandrous.

MONOPETALOUS, in botany, is applied to flowers that have only one undivided leaf.

MONOPOLY, in commerce, denotes when a perſon makes himſelf ſole maſter of a commodity, manufacture, &c. in order to enhance the price thereof. There are two kinds of monopoly, when a perſon buys up corn, &c. to retail it again at an advanced price; or when a patent is procured, prohibiting any other perſon to ſell a certain commodity but the patentee.

MONOPTERE, in architecture, a kind of temple, round, and without walls, having a dome ſupported by columns.

MONOPTOTON, in grammar, a noun that has only one caſe, as *inſic as*.

MONOSTICH, an epigram that conſiſts of only one ſingle verſe.

MONOSYLLABLE, in grammar, a word that conſiſts of only one ſyllable, and is compoſed of either one or more letters pronounced at the ſame time.

MONOTONY, an uniformity of ſound, or a fault in pronunciation, when a long ſeries of words are delivered in one unvaried tone.

MONSOON, in phyſiology, a ſpecies of trade-wind, in the Eaſt Indies, which for ſix months blows conſtantly the ſame way, and the contrary way the other ſix months.

* MONTGOMERY, the capital of Montgomeryſhire, in Wales, with a market on Thurſdays, and four fairs, on March 26, June 7, September 4, and November 14, for ſheep, horned cattle, and horſes. It is an ancient town, ſeated very agreeably on a rocky eminence, near rich meadows. It ſends one member to parliament, who is elected by joint conſent of ſeveral towns. This town was firſt built by Roger de Montgomery, earl of Shrewſbury, from whom it took its name. It was once a place of good ſtrength, was

ſurrounded with a wall, and fortified with a ſtrong caſtle, which was demoliſhed in the civil wars; and the town itſelf does not now conſiſt of above a hundred houſes. It is ſeventy miles north eaſt-by-eaſt of Glouceſter; and one hundred and ſixty-one weſt-by-weſt from London. Long. 3. 10. W. Lat. 52. 36. N.

* MONTGOMERYSHIRE, a county of North Wales, thirty-five miles in length, and thirty-four in breadth. It is bounded on the north by Merionethſhire and Denbighſhire; on the eaſt by Shropſhire; on the ſouth by Radnor and Cardiganſhires; and on the weſt by part of Merionethſhire. It contains ſixty-eight pariſhes, and ſix market-towns. It ſends but two members to parliament, viz. one for the county, and the other for Montgomery. It is watered by ſeveral ſmall ſtreams, which run into the Severn, whoſe head is at a ſmall lake on the top of Plimlimon-hill, and the rivers Rhydel and Wye have their ſources on the ſame mountain. This county is full of high hills, with a few valleys and meadows fit for corn and paſtures. The air is ſharp and cold, on account of the mountains; but in the valleys it is more mild. Montgomery is the capital town.

MONTH, *Menſis*, in chronology, the twelfth part of a year. See *Year*.

Time being duration, marked out for certain uſes, and meaſured by the motion of the heavenly bodies, there thence reſults divers kinds of months as well as years, different from one another, according to the particular luminary by whoſe revolution they are determined, and the particular purpoſes they are deſtined for; hence months are of two kinds, aſtronomical and civil. An aſtronomical month is that which is governed either by the motion of the ſun or moon, and is conſequently of two kinds, ſolar and lunar: a ſolar month is that time in which the ſun ſeems to run through a whole ſign, or the twelfth part of the ecliptic. Hence, if regard be had to the ſun's true apparent motion, the ſolar month will be unequal, ſince the ſun is longer in paſſing through the winter-ſigns than through thoſe of the ſummer; but as he conſtantly travels through all the twelve ſigns in 365 days, 5 hours, and 49 minutes, the quantity of a mean month will be had, by dividing that number by 12; on this principle the quantity of a ſolar month will be found to be 30 days, 10 hours, 29 minutes, 5 ſeconds. See *Earth*.

A lunar month is that ſpace of time which the moon takes up in performing its courſe through the zodiac, or that meaſured by the motion of the moon round the earth; and is of three kinds, viz. periodical, ſynodical, and that of illumination. The lunar periodical month is the ſpace of time wherein the moon makes her round through the zodiac, or wherein ſhe returns to the ſame point, being 27 days, 7 hours, 43 minutes, 5 ſeconds. See *Moon*.

The lunar ſynodical month, called alſo abſolutely the lunar month and lunation, is the ſpace of time between two conjunctions of the moon with the ſun; or the time it takes from one conjunction with the ſun to the next; or from one new moon to another: the quantity of a ſynodical month is 29 days, 12 hours, 44 minutes, 3 ſeconds, and 11 thirds. The quantity of a ſynodical month is not the ſame at all times, for in the ſummer ſolſtice, when the ſun ſeems to move ſloweſt, the ſynodical month appeareth leſs, being about 29 days, 6 hours, 42 minutes; but in the winter, when the ſun's motion ſeems faſter, the moon does not fetch up the ſun ſo ſoon, for which reaſon the ſynodical month then ſeems greater, viz. 29 days, 19 hours, and 37 minutes, according to the obſervation of the ſame aſtronomers: ſo that the firſt quantity of the ſynodical month is to be underſtood as to the mean motion. From what has been ſaid, it may eaſily appear that the difference between a periodical and ſynodical month is this: the firſt is called periodical in reſpect of the moon's orbit: but the ſynodical is ſo called in reſpect of its connection with the other luminary. Now after the time of its conjunction, the ſun does not continue in the ſame place of the zodiac, but moves forwards towards the eaſt; upon which it falls out that the moon, finiſhing its courſe, does not find the ſun again in the ſame place where it left him, he being removed almoſt a whole ſign from his former place; ſo that to overtake the ſun again, it plainly appears that a certain ſpace of time is requiſite beſides the periodical, which makes up the ſynodical month.

The ancient Romans made uſe of the lunar months, and made them alternately of 29 and 30 days; and they marked the days of each month by three terms, viz. calends, nones, and ides.

The lunar month of illumination, or appoſition, or illuminative month, is the ſpace from the firſt time of the moon's appearance after new moon, to her firſt appearance after the new moon following. The lunar month of illumination is not of any determined quantity, becauſe the moon appears ſometimes ſooner, and ſometimes later, after the conjunction; for which diverſity aſtronomers give us ſeveral reaſons, particularly the obliquity of the zodiac, the variable latitude of the moon, the apparent inequality of its motion, the different qualities of the ſummer and winter air, &c. By this month, however, the Turks and Arabs go; and it is ſaid that the ancient Britons went by the phaſes of the moon.

A civil or political month conſiſts of a certain number of days, according to the laws and cuſtoms of the different countries wherein it is uſed, either having no regard to the ſolar or lunar months, as thoſe of the Egyptians in their equal year, of the Romans in the year of Romulus, &c or coming pretty near to the ſolar aſtronomical month, as the Julian; or elſe the lunar aſtronomical, as the Jewiſh, Turkiſh, and others. The Britiſh and moſt European nations make twelve months in the year, viz. January, February, &c. See the articles *January*, &c.

Civil ſolar months are ſuch civil months as are accommodated to the aſtronomical months, or thoſe which are to conſiſt alternately of 30 and 31 days, excepting one month of the twelve, which, for every fourth year, conſiſted of 30 days, and for the other years of 29. This form of civil months was introduced by Julius Cæſar; but under Auguſtus the ſixth month, till then, from its place, called Sextilis, was denominated Auguſtus, in honour of that prince; and to make the compliment yet the greater, a day was added to it, ſo that it now conſiſts of 31 days, though till then it had only 30; to make up for which, a day was taken from February, ſo that from thenceforward it only conſiſted of 28 days, and every fourth year of 29; though before it had ordinarily conſiſted of 29 days, &c. and ſuch are the civil or calendar months which now obtain throughout Europe.

Civil lunar months are to conſiſt alternately of 29 and 30 days: thus will two civil months be equal to two aſtronomical ones, abating for the odd minutes, and conſequently the new moon will be hereby kept to the firſt day of each ſuch civil month, for a long time together. However, to make them keep conſtantly pace with the civil months, at the end of each 948 months, a month of 29 days muſt be added, or elſe every 33d month muſt conſiſt of 30 days. This was the month in civil or common uſe among the Jews, Greeks, and Romans, till the time of Julius Cæſar.

* **MONT-REAL**, an iſland of North America, in the river St. Lawrence, about twenty-eight miles in length, and ten in breadth. The ſoil is fertile, and the air wholeſome: it belonged to the French; but was taken by the generals Amherſt and Murray, the 8th of September, 1760, without firing a gun: according to the terms of capitulation, all the French forces were to be ſent to Old France; and, conſequently, all Canada became ſubject to Great Britain. The town is pretty well fortified, and has a pleaſant ſituation, with wide open ſtreets. The Hotel-Dieu, the magazines, and the place of arms, are in the Lower Town; which is alſo the reſidence of the merchants. The ſeminary or ſchool, the pariſh church, the monks called Recolets, the Jeſuits, and the nuns, are in the Upper. Likewiſe the late governor, and moſt of the officers reſided in this laſt. The inhabitants have carried on a trade with the ſavages in ſkins and furs. It is one hundred and twenty miles ſouth-weſt of Quebec, one hundred and forty north-by-eaſt of lake Ontario, and one hundred and ten north of Albany. Long. 75. 12. W. Lat. 46. 10. N.

MONUMENT, in architecture, a building deſtined to preſerve the memory, &c. of the perſon who raiſed it, or for whom it was raiſed; ſuch are a triumphal arch, a mauſoleum, a pyramid, &c.

MONYCHA, among naturaliſts, an appellation given to animals with ſingle or undivided hoofs.

MOOD, or **MODE**, in logic, called alſo *ſyllogiſtic* mood, a proper diſpoſition of the ſeveral propoſitions of a ſyllogiſm, in reſpect of quantity and quality.

The direct mood is that wherein the concluſion is drawn from the premiſes directly and immediately, as, "Every animal is a living thing, every man is a living animal; therefore, every man is a living thing." There are fourteen of theſe direct moods, four of which belong to the firſt figure, four to the ſecond, and ſix to the third.

The indirect mood is that wherein the concluſion is not inferred immediately from the premiſes, but follows from them by means of a converſion; as, "Every animal is a living thing, every man is an animal; therefore ſome living thing is a man."

MOOD, or MODE, in grammar, the different manner of conjugating verbs, ſerving to denote the different affections of the mind. See *Verb*.

Hence ariſe four moods, viz. the indicative, ſubjunctive, imperative, and infinitive: of thoſe the three firſt are called finite moods, becauſe they define a certain perſon and number; but the fourth is called infinite, becauſe in it there is no diſtinction of either perſon or number. See *Indicative*, &c.

Some grammarians reckon five moods, viz. the indicative, ſubjunctive, optative, imperative, and infinitive; and ſome make ſix, dividing the optative into potential and optative.

MOON, *Luna*, ☽, in aſtronomy, a ſatellite, or ſecondary planet, always attendant on our earth. Of the ſix primary planets, we find but three that are certainly attended with moons, viz. the earth, Jupiter, and Saturn; for though Mr. Short has given an account of a phænomenon that he obſerved ſome years ago, which ſeems extremely like a moon about Venus, yet, as it was never obſerved before nor ſince through the beſt of teleſcopes, it does not appear to be a moon: however, that the reader may uſe his own judgment, we refer him to the account given of it in the Philoſophical Tranſactions.

The diſtance of our moon from the earth is determined by her horizontal parallax, or the angle which the ſemi-diameter of the earth ſubtends at the moon, viz. the angle A O C (plate XXXIV. fig. 1.) which is the difference between the true place of the moon's center O, when in the horizon, and the apparent place thereof, as viewed from the ſurface of the earth at A. The former is known by aſtronomical tables, the latter by obſervation: and the quantity of this difference or angle at a mean is 57′ 12″ = A O C.

If therefore we ſay, As the tangent of 57′ 12″ is to radius, ſo is A C = 1 to C O = 60, 1; this will be the mean diſtance of the moon in ſemi-diameters of the earth. Therefore, ſince one ſemi-diameter of the earth contains 3982 miles, we have 3982 × 60,1 = 239318,2 = C O the mean diſtance of the moon.

The moon's apparent ſemi-diameter M O meaſures (at her mean diſtance) 15′ 38″ = 938″ by the micrometer, which is the quantity of the angle M C O. The earth's diameter therefore is to the moon's as 3432″ to 938″ that is, as 109 to 30, or as 3,63 to 1. Wherefore $\frac{30}{109} \times 7964 = 2192$ miles the moon's diameter.

Therefore the face of the earth, as it appears to the lunarians, is to the face of the moon, as it appears to us, as 109 × 109 to 30 × 30, viz. as 11881 to 900, or as 13,2 to 1. And the real bulk of the earth is to that of the moon as 109 × 1 9 × 109 to 30 × 30 × 30, viz. as 1295029 to 27000, that is, as 1295 to 27, that is, as 1295 to 27, or as 48 to 1 very nearly.

Sir Iſaac Newton mentions the atmoſphere about the moon, but other aſtronomers think there is reaſon (not to ſay a demonſtration) for the contrary: for, were there an atmoſphere of air like ours, it muſt neceſſarily obſcure the fixed ſtars in the moon's appulſe to them; but it has been obſerved that this never happens; on the contrary, they preſerve all their ſplendor to the moment of their occultation, and then diſappear inſtantaneouſly, and in the ſame manner they recover their light, when they appear again on the other ſide. And this I am very certain of from a remarkable occultation of Jupiter, which I obſerved with a good reflecting teleſcope from the beginning to the end with all the attention poſſible, becauſe I was very deſirous to be ſatisfied about that matter; and all the phænomena conſpired to convince me, there was nothing like an atmoſphere about the moon.

That the ſurface of the moon is not ſmooth or even, but diverſified with hills and vales, continents and ſeas, lakes, &c. any one would imagine who views her face through a large teleſcope.

The time which the moon takes up in making one revolution about the earth, from a fixed ſtar to the ſame again, is 27 d. 7 h. 43′, which is called the periodical month. But the time that paſſes between two conjunctions, that is, from one new moon to another, is equal to 29 d. 12 h. 44′ 3″, which is called a ſynodical month: for, after one revolution is finiſhed, the moon has a ſmall arch to deſcribe to get between the ſun and the earth, becauſe the ſun keeps advancing forwards in the ecliptic. Now this ſurplus of motion takes up 2 d. 5 h. 1′ 3″, which added to the periodical month makes the ſynodical, according to the mean motions.

The moon moves about its own axis in the ſame time that it moves about the earth, from whence it comes to paſs that ſhe always ſhews the ſame face to us: for by this motion about her axis juſt ſo much of her ſurface is turned towards us conſtantly, as by her motion about the earth would be turned from us.

But ſince this motion about the axis is equable and uniform, and that about the earth, or common center of gravity, is unequal and irregular, as being performed in an ellipſis, it muſt follow, that the ſame part of the moon's ſurface preciſely can never be ſhewn conſtantly to the earth; and this is confirmed by the teleſcope, through which we often obſerve a little gore or ſegment on the eaſtern and weſtern limb appear and diſappear by turns, as if her body librated to and fro; which therefore occaſioned this phænomenon to be called the moon's libration.

The orbit of the moon is elliptical. more ſo than any of the planets, and is perpetually changing or variable, both in reſpect of its figure and ſituation; of which we ſhall treat more largely further on. The inclination of the moon's orbit to the plane of the ecliptic is alſo variable, from 5 degrees to 5° 18′. The line of nodes likewiſe has a variable motion from eaſt to weſt, contrary to the order of the ſigns, and completes an entire revolution in a ſpace of time a little leſs than nineteen years. Alſo the line of the apſides, or of the apogee and perigee has a direct motion from weſt to eaſt, and finiſhes a revolution in the ſpace of about nine years

The phaſes of the moon in every part of the orbit are eaſily accounted for from her different ſituation with reſpect to the earth and ſun: for though to an eye placed in the ſun ſhe will always exhibit a complete illuminated hemiſphere, yet in reſpect to the earth, where that hemiſphere is viewed in all degrees of obliquity, it will appear in every degree from the greateſt to the leaſt.

As the moon illuminates the earth by a reflex light, ſo does the earth the moon; but the other phænomena will be different for the moſt part. We ſhall inſert them for the reader's curioſity as follows. (1.) The earth will appear but to little more than one half of the lunar inhabitants. (2.) To thoſe to whom the earth is viſible, it appears fixed, or at leaſt to have no circular motion, but only that which reſults from the moon's libration. (3.) Thoſe who live in the middle of the moon's viſible hemiſphere ſee the earth directly over their heads. (4.) To thoſe who live in the extremity of that hemiſphere the earth ſeems always nearly in the horizon, but not exactly there, by reaſon of the libration. (5.) The earth in the courſe of a month would have all the ſame phaſes as the moon has. Thus the lunarians, when the moon is at E (fig. 9.) in the middle of their night, ſee the earth at full, or ſhining with a full face; at G it is dichotomiſed, or half light and half dark; at A it is wholly dark, or new; and at the parts between theſe it is gibbous. (6.) The earth appears variegated with ſpots of different magnitudes and colours, ariſing from the continents, iſlands, oceans, ſeas, clouds, &c. (7) Theſe ſpots will appear conſtantly revolving about the earth's axis, by which the lunarians will determine the earth's diurnal rotation, in the ſame manner as we do that of the ſun.

To find the Age, or Change of the MOON.

Janus 0, 2, 1, 2, 3, 4, 5, 6,
8, 8, 10, 10, theſe to the epact-fix,
The ſum, bate 30, to the month's day add,
Or take from 30, age, or change, is had.

EXAMPLE. March 10, 1752.

Ep. = 14

1 = N° of the month.

15

10 = day of the month.

25 days = moon's age.

30

15

15 March = change.

To find the Time of the MOON's *coming to the South, and of High-Water at* London-Bridge.

Four times the moon's age, if by 5 you
divide,
Gives the hour of her ſouthing; add 2
for the tide.

EXAMPLE. Moon's age = 9 days.

4

5)36(7 H.

1

12 M. = $\frac{1}{3}$ H.

7 H. 12 M. p. m. = ſouthing.

2

9 12 = high water.

To find the Time of the MOON's *beginning*

to ſhine.—Multiply her age, if under 15, by 48, and divide the product by 60; the quotient gives the hour, and the remainder the minute. If her age be above 15 days, ſubſtract the time thus found from 24; the remainder gives the time of ſhining in the morning.

MOOR, in country affairs, an unlimited tract of land, uſually over-run with heath.

MOOR-BUZZARD, the Engliſh name of the yellow legged falcon, with an iron-coloured body and yellow head. It is about the ſize of a common crow.

MOOR-COCK, or GOR-COCK, a ſpecies of tretrao, with a forked tail, ſpotted, with white underneath. It is a native of England, but very rare; the male is throughout of a very deep iron-grey, without any variegation; and the female is alſo grey, but variegated with tranſverſe lines of black.

MOOR-HEN, the Engliſh name of the gallinula or tringa. See *Tringa*.

MOORING, in the marine, the act of faſtening a ſhip by two or more cables, in a road, haven, or river. A ſhip may be either moored in a harbour, head and ſtern; that is, faſtened at both ends with cables, reaching from the fore and hind-parts, or with two cables from one end, viz. one from each bow; or ſhe may be ſecured by moorings, which always remain ſunk in the bottom for that purpoſe.

Moorings are compoſed of anchors, chains, and bridles. The anchors formed for this purpoſe have only one flook, and are ſunk on the two ſides of the river with a ſtrong chain faſtened to each of them, which reaches acroſs the ſtream. In the middle of this chain is fixed a ſwivel or large link, which turns round in the chain as the ſhip ſwings with the tide; and to this link the bridles are faſtened. The bridles are ſhort pieces of cable, whoſe upper ends are drawn into the ſhip at the mooring ports, and afterwards faſtened to the maſts.

MOOR-STONE, a valuable ſtone much uſed in the coarſer works of the preſent builders; being truly a white granite, of a marbly texture.

MOOT, a difficult caſe urged by the young barriſters and ſtudents at the inns of court, by way of exerciſe, the better to qualify them for practice, and to defend the cauſes of their clients. This, which is called mooting, is the chief exerciſe of the inns of court. Particular times are appointed for the arguing moot-caſes: the place where this exerciſe is performed, was anciently called Moot-hall; and there is a bailiff, or ſurveyor of the moots anually choſen by the bench, to appoint the moot-men for the inns of Chancery, and to keep an account of the performance of exerciſes.

MORAL, belonging to manners, or the conduct of life.

MORAL PHILOSOPHY, the ſame with ethics. See *Ethics*.

MORAL SENSE, that whereby we perceive what is good, virtuous, and beautiful in actions, manners, and characters.

MORALITY, the ſcience and doctrine of morals, otherwiſe called ethics. See *Ethics*.

Morality may be defined to be the relation, conformity, or agreement of men's voluntary actions to a rule, to which they are referred, and by which they are judged of. Theſe moral rules ſeem to be of three ſorts, with their different enforcements. 1. The divine, whether known by the light of nature or the voice of revelation, which is the only true touchſtone of moral rectitude, the conſciences of men bearing witneſs either of the goodneſs or ſinfulneſs of their actions; that is, whether as duties or ſins they are like to procure them happineſs, or miſery, from the hands of the Almighty. 2. The civil law, which is the rule ſet by the commonwealth to the actions of thoſe that belong to it: this rule no body overlooks, the rewards and puniſhments being ready at hand to enforce it, extending to the protecting or taking away of the life, liberty, and eſtate of thoſe who obſerve and diſobey it. 3. The law of opinion and reputation, whereby virtue and praiſe, vice and blame, are ever found to accompany each other: now thoſe who do not think commendation and diſgrace ſufficient motives to engage mankind to accomodate themſelves to the opinions, and rules of thoſe with whom they converſe, ſeem little ſkilled in the hiſtory of mankind, ſince moſt people govern themſelves chiefly by this law of faſhion. See *Relation*.

Moral philoſophy contemplates human nature, its moral powers and connections, and from theſe deduces the laws of action; though it muſt be confeſſed, that different philoſophers have eſtabliſhed different ſyſtems concerning the foundation of morality, which the reader will find under the article *Ethics*.

According to Mr. Locke, the idea of a Supreme Being, infinite in power, goodneſs, and wiſdom, whoſe workmanſhip we are, and on whom we depend, and the idea of ourſelves, as intelligent creatures, would, if duly conſidered, afford ſuch foundations of our duty and rules of action, as might place morality among the ſciences capable of demonſtration.

As to the reaſons why the mathematical ſciences have been thought more capable of demonſtration than the ideas of good and evil, right and wrong, &c. they are theſe. 1. That the former can be repreſented by ſenſible marks, as diagrams, which have a nearer correſpondence with them than any words. 2. Moral ideas are commonly more complex than thoſe of figures; whence it happens, that their names are of more uncertain ſignification; and beſides, the mind cannot eaſily retain theſe preciſe combinations ſo perfectly, as is neceſſary in the examination of the agreements and diſagreements of ſeveral of them one with another. See *Knowledge*.

One part of theſe diſadvantages in moral ideas, continues the ſame great author, may in a good meaſure be remedied by accurate definitions, ſetting down that collection of ſimple ideas which every term ſhall ſtand for, and then uſing the term ſteadily for that preciſe collection. See *Definition*.

MORASS, a low, moiſt land, which receives the waters from the higher grounds, without having any deſcent to carry them off.

MORATUR, or DEMORATUR, in law, he demurs; a term uſed when one of the parties in a cauſe demurs, and does not proceed in pleading, but reſts upon the judgment of the court in ſome particular point, either in relation to the ſufficiency of the declaration, or the pleas of the contrary party; upon which the court, after taking ſome time to argue and adviſe, determine the point.

MORBID, among phyſicians, ſignifies diſeaſed or corrupt, a term applied either to an unſound conſtitution, or to thoſe parts or humours that are infected by a diſeaſe.

* MORE (Sir THOMAS) lord chancellor of England in the reign of King Henry VIII. was the only ſon of Sir John More, knight, one of the juſtices of the king's bench, and was born in 1480. He was educated at Oxford, whence he removed to New Inn for the ſtudy of the law, and thence to Lincoln's-Inn, where he continued his ſtudies and became a barriſter. After this he for ſome time read a public lecture upon St. Auguſtin *De Civitate Dei*, in St. Lawrence's church in the Old Jewry. He was a Burgeſs in parliament in 1501. At length his ingenuity being known to King Henry VIII. he was made maſter of the requeſts; knighted and appointed one of the privy-council. In 1520 he was made treaſurer of the exchequer, and the next year ſpeaker of the houſe of commons. In 1528 chancellor of the duchy of Lancaſter, and was admitted into the higheſt degree of favour with the king. He was twice ambaſſador, being once joined in commiſſion with cardinal Wolſey to the emperor Charles V. and the other time ſent to the king of France. Upon the removal of Wolſey in 1530 he had the great ſeal of England delivered to him, and was declared lord high chancellor, in which office he acted with the greateſt integrity and univerſal approbation. He was averſe to the king's divorce from queen Catharine, and to his marriage with Anne Boleyn, and reſigned the great ſeal the 15th of May, 1533, when he retired to his houſe at Chelſea, where he enjoyed a ſtudious retirement, till at laſt falling under the king's diſpleaſure, ſeveral accuſations were laid againſt him, of which he cleared himſelf; but upon his refuſing to take the oath of the king's ſupremacy, he was committed priſoner to the Tower of London, condemned for high treaſon, and beheaded on Tower-hill, the ſixth of July, 1535. As he was going up the ſcaffold, which ſeemed to him ſo weak that it was ready to fall, he ſaid merrily to the lord-lieutenant of the Tower. "I pray you, Mr. lieutenant, "ſee me ſafe up, and for my coming "down let me ſhift for myſelf:" and upon laying his head on the block, he bid the executioner ſtay till he had removed his beard, obſerving that it had never committed any treaſon. This truly great and good man wrote ſeveral works.

MORESK, or MORISCO, is a kind of painting, carving, &c. done after the manner of the Moors; conſiſting of ſeveral groteſque pieces and compartments, promiſcuouſly mingled, not containing any perfect figure of a man, or other animal; but a wild reſemblance of birds, beaſts, trees, &c.

MORNING, the beginning of the day, the firſt appearance of light, or the time from midnight till noon.

MOROCCO, *Marroquin*, in commerce, a fine kind of leather, prepared of the ſkin of an animal of the goat kind, and imported from the Levant, Barbary, &c.

Manner of preparing Red MOROCCO.—

After ſteeping, ſtretching, ſcraping, beating, and rinſing, the ſkins are at length wrung, ſtretched on the leg, and paſſed after each other into water where alum has been diſſolved. Thus alumed, they are left to drain till morning, then wrung out, pulled on the leg, and folded from head to tail, the fleſh inwards. In this ſtate they receive their firſt dye, by paſſing them after one another into a red liquor, prepared with laque, and ſome other ingredients, which the marroquineers keep a ſecret. This they repeat again and again, till the ſkins have got their firſt colour; then they are rinſed in clear water, ſtretched on the leg, and left to drain twelve hours; thrown into water, into which white galls pulverized have been paſt through a ſieve, and ſtirred inceſſantly for a day with long poles; taken out, hung on a bar acroſs the water all night, white againſt red, and red againſt white, and in the morning the water ſtirred up, and the ſkins returned into it for twenty-four hours.

* MOROCCO, empire of, a country in Africa, bounded by the ſtreights of Gibraltar and the Mediterranean ſea on the north; by the river Mulvia on the eaſt; by Biledulgerid on the ſouth; and by the Atlantic ocean on the weſt. It is divided into three parts, Fez, Morocco Proper, and Suz, beſides the kingdom of Tafilet and the province of Geſula. The chief towns of the firſt are Fez and Mequinez; of the ſecond, Morocco; and of the third Taradant. The capes of the moſt note are Cape Spartel, at the entrance of the ſtreights of Gibraltar, and Cape Cantin, in the ocean. The great mountain, called Mount Atlas, which runs the whole length of Barbary, from eaſt to weſt paſſes through Morocco as far as the ſea, which upon this account is called the Atlantic ocean. The chief rivers are the Mulvia, the Sus, the Ommirabi, the Tenſif, and the Guedet: of theſe rivers the Mulvia only is navigable, and the mouth of that is almoſt choaked up with ſand. The air of this country is temperate, it being refreſhed by breezes in the hotteſt ſeaſon, and they have very little winter. Fez is the capital city, and the emperor has a palace there, though he chiefly reſides at Mequinez. The ſoil is exceeding good, and capable of producing vaſt quantities of corn, wine, and oil. The plains of Fez and Morocco are well planted with olives, and there are no better grapes in the world. The plains produce excellent hemp and flax; but as for timber trees they have very few. The animals are the ſame as in other parts of Africa, except the elephant and rhinoceros, which never ramble ſo far to the north. However, they have camels, which are not to be met with in the ſouth, and a breed of horſes called barbs, the fineſt in the world. They carry on a trade, by land, to Arabia and Negroeland, with very fine woollen manufactures, Morocco leather, indigo, cochineal, and oſtrich feathers; and bring back ſilks, muſlins, and drugs. The caravans to Negroeland carry ſalt, ſilk, and woollen manufactures, and bring back gold, ivory, and Negroe ſlaves. With regard to their religion, it is the ſame as in other Mahometan countries, and needs not be particularly mentioned here. Their puniſhment of criminals is by impaling them alive, or dragging them along the ſtreets till their fleſh is torn off, or throwing them on iron hooks, where they hang till they die. They have but few ſhips, for which reaſon the Europeans bring them linen and woollen cloth, ſtuffs, iron, wrought and unwrought, arms, gunpowder, and lead, for which they carry back copper, wax, Morocco leather, very fine wool, gums, ſoap, dates, almonds, and other fruits.

* MORPHEUS, in fabulous hiſtory, the god of ſleep, or as ſome ſay, one of the miniſters of Somnus He cauſed ſleepineſs, and repreſented the forms of dreams. Ovid gives him the appellation of the kindeſt of deities. He is uſually repreſented in a recumbent poſture, and crowned with poppies.

MORPHEW, a leprous kind of ſcurf, which ſometimes breaks out upon the ſkin, particularly about the forehead.

MORSE, in zoology, a name by which ſome call the hippopotamus.

MORTALITY, or *Bills of* MORTALITY, properly denote weekly liſts of the perſons who die in any place. In London, theſe bills are drawn up by the company of pariſh-clerks, and contain an account of the numbers, ages, diſeaſes, &c. of ſuch as die within the bills of mortality; that is, in London, Weſtminſter, and ten miles round. The great diſparity between the births and burials in London, is owing to this, that the diſſenters of all ſorts baptize their children without ſending an account of them to the pariſh clerks, and perſons are continually coming up from all parts, to the metropolis; ſo that little dependance is to be had on theſe, with regard to calculating annuities for life.

MORTAR, a preparation of lime and ſand. mixed up with water, which ſerves as a cement, and is uſed by maſons and brick-layers in building of walls of ſtone and brick. Beſides the common mortar uſed in laying ſtones, bricks, &c there are ſeveral other kinds; as, 1. white mortar, uſed in plaiſtering walls and cielings, which are often firſt plaiſtered with loam, and is made of ox or cow-hair mixed and tempered with lime and water without any ſand. The common allowance is one buſhel of hair to ſix of lime; the hair binds the mortar, holds it faſt together, and keeps it from cracking. 2. Mortar for furnaces, &c. is made with red clay wrought in water in which horſe-dung and chimney-ſoot has been ſteeped, by which a ſalt is communicated to the water, which binds the clay and makes it fit to endure the fire: this clay ought not to be too fat, leſt it ſhould be ſubject to crack; nor too lean or ſandy, leſt it ſhould not bind enough. 3. Some workmen in metals, uſe a kind of mortar to plaiſter over the inſide of the veſſels in which they refine their metals, to keep them from running out: this kind of mortar is made with quick-lime and ox-blood, the lime being firſt beaten to powder and ſifted, and afterwards mixed with the blood. 4. Mortar for ſun-dials on walls, may be made of lime and ſand tempered with linſeed oil, or for want of the latter, with ſkimmed milk; but oil is better. This ſpread upon the wall will become as hard as ſtone, and will endure the weather ſix times as long as the ordinary plaiſter made of lime and hair with water. 5. For plaiſtering the fronts of houſes in imitation of brick-work, ſome uſe a mortar made of ſharp ſand and lime, powder of brick, and ſome red ochree: and timber-houſes, plaiſtered over with this kind of mortar, look well, though they have been done twenty or thirty years. 6. The mortar uſed in Italy for making water courſes and ciſterns, and alſo in finiſhing or plaiſtering of fronts is of two ſorts: the one is compoſed of lime and hogs-greaſe, mixed with the juice of figs; and the other is of the ſame ingredients, but has liquid pitch added to the reſt, and is firſt wet or ſlaked with wine, and then pounded or beaten with hog's greaſe and juice of figs. 7. An extraordinary good mortar for floors, walls, cielings, &c. may be made with ox-blood and fine clay tempered together. 8. And in buildings, one part of waſte ſoap-aſhes, mixed with another of lime and ſand, make a very durable mortar.

MORTAR-PIECE, a ſhort piece of ordnance, conſiderably thick and wide, ſerving to throw bombs, carcaſſes, fire-pots, &c. The uſe of mortars is thought to be older than that of cannon; they being employed in the wars in Italy to throw ſtones and balls of red-hot iron, long before the invention of bombs; which, as Blondel informs us, were firſt thrown at the ſiege of Wachtendonk, in Guelderland, in 1588. It was formerly the opinion of gunners, that only one certain charge of powder was requiſite for each mortar, and that the horizontal range could not be altered but by changing the direction of the piece; but, at preſent, when a place lying in the ſame horizontal plane with the mortar, is to be bombarded, they elevate the piece to 45°, and augment or diminiſh the charge of powder until they can hit the mark. The following advantages introduced this practice: 1. The public powder is ſaved as much as poſſible; becauſe, at a direction of 45°, a leſs velocity, and conſequently a leſs charge of powder is required to make any horizontal range, than is neceſſary to make the ſame horizontal range at any other elevation. 2. In elevating mortars to their proper directions, gunners ſeldom come within a degree or two of the propoſed elevation, both on account of the imperfection of the inſtruments which they generally uſe for that purpoſe, and the hurry they are in at that time. And in bombarding towns from ſhips, it is ſcarce poſſible to come within two degrees of the deſigned elevation, becauſe of the agitation of the veſſel, which continually changes the direction of the mortar. But by raiſing the mortar to 45°, the bad conſequences of this inaccuracy of elevation are in a great meaſure prevented, becauſe a ſmall error above or below 45°, occaſions a very inconſiderable error of amplitude. For the ſame reaſons, alſo, places lying above or below the horizontal plane, paſſing through the piece, are bombarded by directing the mortar ſo as its axis may biſect the angle comprehended between a perpendicular to the horizon, at the point of projection, and a line drawn from that point to the mark aimed at; and then augmenting and diminiſhing the charge of powder until the object be hit. When the buſineſs, therefore, can be effectually done by this middle elevation, it ought certainly to be preferred to any other. In ſhooting with mortars, the following general rules ſhould be always obſerved, 1. To meaſure the diſtance of the object aimed at. 2. That the bombs be of equal weight, otherwiſe the ſhots will vary. 3. That the carriage be on an exact level, to prevent its leaping. 4. That the powder with which the piece is charged, be always of the ſame ſtrength and quantity. 5. That the charge be always equally rammed down. 6. That the wads be always of wood, tompions, or oakum. 7. That the fuſees be freſh made the days on which they are to be uſed; and that they be of a compoſition proportionable to the range of the ſhot in the air, ſo that the bomb may break at the very moment of, or ſoon after, its fall; which compoſition muſt be ſuch as not to be extinguiſhed though it falls in water, but continue burning till the bomb breaks. See BOMB.

MORTGAGE, in law, a pledge or pawn of lands, tenements, &c. for money borrowed; ſo called becauſe if the money is not paid at the day, the land dies to the debtor, and is forfeited to the creditor. The common method of making a mortgage, is by leaſe for a long term of years, wherein a pepper-corn rent has been uſually reſerved; or it may be made by aſſignment for a term, and by leaſe and releaſe. The creditor, who holds the eſtate according to the condition of the deed, is called the mortgagee; but the mortgager, who is the perſon that makes the mortgage, generally keeps poſſeſſion of the land till failure is made in the payment of the mortgage money; in which caſe, though the mortagee enters for non-payment, the mortgager has a right to the equity of redemption in the court of chancery, where he may call the mortgagee to an account for the profits of the land mortgaged. By a late ſtatute it is ordained, that when any action of ejectment is brought by a mortgagee, for the recovery of the poſſeſſion of the lands or tenements, &c. mortgaged, and there is no ſuit in equity for forecloſing or redeeming the equity of redemption, in caſe the perſon intitled to redeem ſhall, *pendente lite*, or pending the action, bring all the principal and intereſt due, with coſts, into court, it ſhall be taken as a full ſatisfaction and diſcharge of the mortgage, and the mortgagee ſhall thereon be obliged to reconvey the land, &c. and deliver up all deeds, &c. 7 Geo. II. c. 201.

MORTIFICATION, in medicine, the ſame with ſphacelus. See SPHACELUS.

MORTISE, or MORTOISE, in carpentry, &c. a kind of joint, wherein a hole of a certain depth is made in a piece of timber, which is to receive another piece called a tenon.

MORTMAIN, in law, the alienation of lands or tenements to any religious houſe, corporation, or fraternity, and their ſucceſſors. Lands alienated in mortmain are different from others, for they never revert to the donor, or to any temporal or common uſe; on which accounts the lords by ſuch alienation loſe their eſcheats, and many ſervices that were formerly due to them; as bodies politic never die, nor can perform perſonal ſervice, commit treaſon, felony, or the like. By the ſtatute of mortmain lately made, it is enacted, that no manors, lands, &c. ſhall be given or granted to, or ſettled upon any perſons, bodies politic, &c. for any eſtate whatſoever, or charged in truſt for charitable uſes, unleſs it be done by deed indented and ſealed twelve months at leaſt before the donor's death, and inrolled in chancery within ſix months after executed. The two Univerſities, and the colleges of Eaton, Weſtminſter, &c are excepted out of this act. 9 Geo. II. c. 36.

MORTUARY, in the eccleſiaſtical law, a gift left by a man at his death to his pariſh-church, in recompence of perſonal tythes omitted to be paid in his life-time: or it is that beaſt, or other cattle, which, after the death of the owner, by the cuſtom of the place, is due to the parſon or vicar, in lieu of tithes or offerings forgot, or not well and truly paid by him that is dead.

MOSAIC, or MOSAIC-WORK, an aſſemblage of little pieces of glaſs, marble, precious ſtones, &c. of various colours cut ſquare, and cemented on a ground of ſtucco, in ſuch a manner as to imitate the colours and degradations of painting. The materials uſed for theſe works are little pieces of glaſs of all the different ſhades in every tint or colour, like thoſe of the fine Engliſh worſted uſed in needle-work. The glaſs is firſt caſt into thin cakes, which are afterwards cut into long pieces of a different thickneſs. Many of the pieces uſed in the works on roofs and ceilings, which are conſequently ſeen only at a great diſtance, appear to be a finger's breadth; but the finer works conſiſt only of glaſs pins, if we may make uſe of that expreſſion, not thicker than a common ſewing needle, ſo that a portrait of four feet ſquare ſhall take up two millions of ſuch pins or ſtuds. Theſe pins are ſo cloſely joined together, that after the piece is poliſhed, which is done in the ſame manner as looking-glaſſes are poliſhed, it can hardly be diſcerned to be an arrangement of an infinite number of particles of glaſs; but rather looks like a picture painted with the fineſt colours, with cryſtal placed before it. The ground in which theſe vitreous pieces are inlaid, is a paſte, compounded of calcined marble, fine ſand, gum tragacanth, whites of eggs, and oil. It is at firſt ſo ſoft that the pieces are eaſily inſerted, and upon an overſight, may be taken out again, and the paſte new moulded for the admiſſion of other pins or ſtuds; but by degrees it grows as hard as a ſtone, ſo that no impreſſion can be made on the work. This paſte is ſpread within a wooden frame, which, for the large pieces, muſt not be leſs than a foot in breadth and thickneſs. This frame is faſtened with braſs tacks to a plate of the ſame metal, or to a ſtone ſlab; and as in capital pieces, which are often twenty feet by fifteen, this paſte-ground muſt be above three quarters of a foot deep, and the pins or ſtuds as long, it may eaſily be conceived of what weight ſuch a piece muſt be. The pieces deſigned for roofs, or any diſtant place, are not poliſhed; but in the altar-pieces, &c. nothing is wanting to give them the moſt beautiful and ſplendid appearance. A piece of about eighty feet ſquare, if performed with tolerable care and delicacy, will employ eight artiſts for the ſpace of two years. The ſtuds of the ſeveral colours lie ready before the artiſt in caſes, as the letters are laid before the compoſitors in a printing-houſe: and ſuch is their accuracy in imitating the fineſt ſtrokes of the pencil, that the only apparent difference betwixt the original painting and ſuch a copy, is, that the latter has a much finer luſtre, and the colours are more vivid.

Method of performing MOSAIC-WORK *of Marble and precious Stones.*—The ground of moſaic-works wholly marble, is uſually a maſſive marble, either white or black. On this ground the deſign is cut with a chiſſel, after it has been firſt calqued. After it has been cut of a conſiderable depth, i. e. an inch or more, the cavities are filled up with marble of a proper colour, firſt faſhioned according to the deſign, and reduced to the thickneſs of the indentures with various inſtruments. To make the pieces thus inſerted into the indentures cleave faſt, whoſe ſeveral colours are to imitate thoſe of the deſign, they uſe a ſtucco, compoſed of lime and marble-duſt; or a kind of maſtic, which is prepared by each workman after a different manner peculiar to himſelf.

The figures being marked out, the painter or ſculptor himſelf draws with a pencil the colours of the figures, not determined by the ground, and in the ſame manner makes ſtrokes or hatchings in the place where ſhadows are to be; and after he has engraven with the chiſſel all the ſtrokes thus drawn, he fills them up with a black maſtic, compoſed partly of Burgundy-pitch poured on hot; taking off afterwards what is ſuperfluous with a piece of ſoft ſtone or brick, which, together with water and beaten cement, takes away the maſtic, poliſhes the marble, and renders the whole ſo even, that one would imagine it only conſiſted of one piece.

This is the kind of Moſaic work that is ſeen in the pompous church of the Invalids at Paris, and the fine chapel at Verſailles, with which ſome entire apartments of that palace are incruſtated.

As for Moſaic work of precious ſtones, other and finer inſtruments are required than thoſe uſed in marble, as drills, wheels, &c. uſed by lapidaries and engravers on ſtone. As none but the richeſt marbles and ſtones enter this work, to make them go the further they are ſawn into the thinneſt leaves imaginable, ſcarce exceeding half a line in thickneſs; the block to be ſawn is faſtened firmly with cords on the bench, and only raiſed a little on a piece of wood, one or two inches high. Two iron pins, which are on one ſide the block, and which ſerve to faſten it, are put into a vice contrived for the purpoſe, and with a kind of ſaw or bow, made of fine braſs wire, bent on a piece of ſpongy wood, together with emery ſteeped in water; the leaf is gradually faſhioned by following the ſtroke of the deſign made on paper, and glued on the piece. When there are pieces enough faſtened to form an entire flower, or ſome other part of the deſign, they are applied to the ground.

The ground which ſupports this Moſaic work is uſually of free-ſtone. The matter with which the ſtones are joined together, is a maſtic, or kind of ſtucco, laid very thin on the leaves as they are faſhioned; and this being done, the leaves are applied with plyers.

If any contour, or ſide of a leaf, be not either ſquared or rounded ſufficiently, ſo as to fit the place exactly into which it is to be inſerted, when it is too large, it is to be brought down with a braſs file or raſp; and if it be too little, it is managed with a drill and other inſtruments uſed by lapidaries.

Moſaic work of marble is uſed in large works, as in pavements of churches, baſilics, and palaces; and in the incruſtation and vaneering of the walls of the ſame edifices.

As for that of precious ſtones, it is only uſed in ſmall works, as ornaments for altar-pieces, tables for rich cabinets, precious ſtones being ſo very dear.

* MOSCOW, the duchy of, a province of the weſtern part of the Ruſſian empire, bounded on the north by the province of Tweer; on the eaſt by Niſe Novogorod; on the ſouth by Rezan; and on the weſt by Smolenſko.

* MOSCOW, a city of the Ruſſian empire, and the capital of the duchy of Moſcow. It is divided into four parts, of which that in the middle is called Kitaigorod, and is ſurrounded with a ſtrong wall of red ſtone, and contains the royal palace, with the church of the Annunciation, which has a vaſt vault, wherein are the tombs of the czars. It has nine towers, and is covered with gilded plates of copper, as are all the other churches. It is 460 miles from Peterſburgh, and 1400 north-eaſt of London.

MOSQUE, a temple, or place of religious worſhip, among the Mahometans. All moſques are ſquare buildings, generally built with ſtone: before the chief gate there is a ſquare court, paved with white marble, and low galleries round it, whoſe roof is ſupported by marble pillars. In theſe galleries the Turks waſh themſelves before they go into the moſque. In each moſque there is a great number of lamps; and between theſe hang many cryſtal rings, oſtriches eggs, and other curioſities, which, when the lamps are lighted, make a fine ſhew. As it is not lawful to enter the moſques with ſhoes or ſtockings on, the pavements are covered with pieces of ſtuff ſewed together, each being wide enough to hold a row of men kneeling, ſitting, or proſtrate. The women are not allowed to enter the moſque, but ſtay in the porches without. About every moſque there are ſix high towers, called minarets, each of which has three little open galleries, one above another: theſe towers, as well as the moſques, are covered with lead, and adorned with gilding and other ornaments; and from thence, inſtead of a bell, the people are called to prayer by certain officers appointed for that purpoſe. Moſt of the moſques have a kind of hoſpital belonging to them, in which travellers, of what religion ſoever, are entertained during three days. Each moſque has alſo a place called Tarbé, which is the burying-place of its founders; within which is a tomb, ſix or ſeven feet long, covered with green velvet or ſattin, at the ends of which are two tapers, and round it ſeveral ſeats for thoſe who read the koran, and pray for the ſouls of the deceaſed.

MOSS, *Muſcus*, in botany, a very numerous order of plants, belonging to the cryptogamia claſs, the fructification of which is but little underſtood. Moſſes are of conſiderable uſe in medicine; uſnea is eſteemed a good deſiccative and aſtringent; the cup-moſs is recommended in the chin-cough; the grey ground-lichen, or liverwort, againſt the bite of a mad dog; and other ſpecies, in other diſorders, as metioned under their reſpective heads. Moſs is frequently very injurious to fruit-trees, which grow upon cold barren ſoils, or where they are ſo cloſe planted as to exclude the free acceſs of the air; the only remedy, in ſuch caſes, is to cut down part of the trees, and to plough up the ground between thoſe left remaining; and in the ſpring-ſeaſon, in moiſt weather, you ſhould, with an iron inſtrument made a little hollow, the better to ſurround the branches of the trees, ſcrape off the moſs, carrying it off the place; and by two or three times thus cleanſing them, together with carefully ſtirring the ground, it may be entirely deſtroyed from the trees; but unleſs part of the trees are cut down, and the ground be well ſtirred, the rubbiſh of the moſs will ſignify little.

If the trees are covered with moſs, on account of the dryneſs of the ground, the proper remedy is to lay mud, from the bottom of a river or pond, pretty thick about their roots.

MOSS is alſo a name given to boggy grounds in many parts of the kingdom. Theſe conſiſt of a turfy ſurface, below which is a black, moiſt, ſpongy earth, which being dug up with ſpades ſomewhat

what in the form of bricks, and dried, is what they call peats, uſed as fuel in ſeveral parts; and the upper ſcurf, being cut and dried, makes turfs, another coarſer ſort of fuel.

MOTH, *Tinea*, or *Phalæna*, in zoology. See *Phalæna*.

MOTION, the continual and ſucceſſive change of place, and is either abſolute or relative.

Abſolute MOTION, the change of abſolute ſpace or place of bodies, as the flight of a bird, the motion of a projectile, &c.

Relative MOTION, is the change of relative ſpace, or that which has reference to ſome other bodies; as of two ſhips under ſail, the difference of their velocities is the relative velocity or motion of the ſhip ſailing faſteſt; and is that alone which is diſcernible by us. The ſame is to be underſtood of abſolute and relative reſt.

To make this matter plainer, we are to conſider that ſpace is nothing elſe but an abſolute and infinite void, which it takes up or poſſeſſes; and that place may be conſidered either abſolutely or in itſelf alone; and then it is called the abſolute place of the body; or elſe with regard to the place of ſome other body, and then it is called the relative or apparent place of bodies. Now, as a motion is only the change of place in bodies, it is evident that it will come under the ſame diſtinction of abſolute and relative, or apparent. All motion is in itſelf abſolute, or the change of abſolute ſpace; but when the motions of bodies are conſidered and compared with each other, then they are relative and apparent only: they are relative, as they are compared to each other; and they are apparent only, inſomuch that not their true or abſolute motion, but the ſum or difference of the motions only is perceivable by us.

In comparing the motions of bodies we may conſider them as moving both the ſame way or towards contrary parts; in the firſt caſe the difference of motion is only perceived by us, in the latter the the ſum of the motions. Thus for example; ſuppoſe two ſhips A and B ſet ſail from the ſame port upon the ſame rhumb, and that A ſails at the rate of five miles per hour, and B at the rate of three; here the difference of the velocity, viz. (two miles per hour) is that by which the ſhip A will appear to go from the ſhip B forwards, or the ſhip B will appear at A to go with the ſame velocity backwards, to a ſpectator in either reſpectively.

If two ſhips A and B move with the ſame degree of velocity, then will the difference be nothing; and ſo neither ſhip will appear to the other to move at all. Hence it is that, though the earth is continually revolving about its axis, yet as all objects on its ſurface partake of the ſame common motion, they appear not to move at all, but are relatively at reſt.

If two ſhips A and B, with the degrees of velocity as above, meet each other, the one will appear to the other to move with the ſum of both velocities, viz. at the rate of eight miles per hour; ſo that in this caſe the apparent motion exceeds the true, as in the other it fell ſhort of it. Hence the reaſon why a perſon, riding againſt the wind finds the force of it much greater than it really is; whereas if he rides with it, he finds it leſs.

The reaſon of all theſe phænomena of motion will be evident, if we conſider we muſt be abſolutely at reſt, if we would diſcern the true or real motion of bodies about us. Thus a perſon on the ſtrand will obſerve the ſhips ſailing with their real velocity. A perſon ſtanding ſtill will experience the true ſtrength and velocity of the wind; and a perſon placed in the regions between the planets, will view all their true motions, which he cannot otherwiſe do, becauſe in all other caſes the ſpectator's own motion muſt be added to, or ſubtracted from, that of the moving body, and the ſum, or difference, is therefore the apparent or relative motion, and not the true.

Motion is alſo either equable or accelerated.

Equable MOTION is that by which a body paſſes over equal ſpaces in equal times.

Accelerated MOTION is that which is continually augmented or increaſed, as retarded motion is that which continually decreaſes; and if the increaſe or decreaſe of motion be equal in equal times, the motion is then ſaid to be equally accelerated or retarded.

Equable MOTION is generated by a ſingle impetus or ſtroke; thus the motion of a ball from a cannon is produced by the ſingle action of the powder in the firſt moment, and therefore the velocity it firſt ſets out with would always continue the ſame, were it void of gravity, and to move in an unreſiſting medium, which therefore would be always equable, or ſuch as would carry it through the ſame length of ſpace in every equal part of time.

Hence we may determine the theorems for the expreſſions of the time, velocity, and the ſpace paſſed over in equable or uniform motion very eaſily thus:

Let T and *t* repreſent the times of a body moving with the velocities V and *v*, whereby the ſpaces S and *s* are reſpectively deſcribed; then as the ſpace deſcribed can only be influenced by the time and velocity, it follows, that $S = T \times V$, and $s = t \times v$; whence $S : s :: T \times V : t \times v$; therefore $S \times t \times v = s \times T \times V$: from this general equation, we have $T : t :: S \times v : s \times V$, and $V : v :: S \times t : s \times T$; that is, the times are as the ſpaces directly, and the velocities inverſely; or in other words, they increaſe with the ſpaces, and decreaſe with the velocities, and the velocities are directly as the ſpaces, and inverſely as the times, and conſequently they encreaſe with the ſpaces, and decreaſe with the times.

Accelerated motion is produced by a conſtant impulſe or power, which keeps continually acting upon the body, as that of gravity, which produces the motion of falling bodies; which motion is conſtantly accelerated, becauſe gravity every moment adds a new impulſe, which generates a new degree of velocity; and the velocity thus increaſing, the motion muſt be quickened each moment, or fall faſter and faſter the lower it falls.

In like manner a body thrown perpendicularly upward; and as a ball from a cannon will have its motion continually retarded, becauſe gravity acts conſtantly upon it, in a direction contrary to that given by the powder, ſo that its velocity upwards be continually diminiſhed, and ſo its motion as continually retarded, till at laſt it be all deſtroyed. The body has then attained its utmoſt height, and is for a moment motionleſs, after which it begins to deſcend with a velocity in the ſame manner accelerated, till it comes to the earth's ſurface.

The motion generated by an uniformly accelerating force in any given time, is always proportional to that force, it being the genuine and natural effect thereof; and ſince in all the ſeveral parts of time, the force remains the ſame, and has the ſame efficacy; therefore the motion generated will alſo be as the time; whence univerſally the motion generated is in the compound ratio of both the force and the time of acting

The quantity of motion is as the matter and velocity; therefore the velocity is as the motion directly and the matter reciprocally, and the velocity generated (or deſtroyed) in any time, is as the force and time directly, and the quantity of matter reciprocally.

The ſpace deſcribed from the beginning of the motion generated by an uniform accelerative force, is in the compound ratio of the laſt velocity, and the time wherein it is generated.

MOTIONS, in war, the marches, counter-marches, &c. of an army in changing its poſt. See *March*, &c.

MOTTO, in armoury, a ſhort ſentence or phraſe carried in a ſcroll, generally under, but ſometimes over the arms; ſometimes alluding to the bearing, ſometimes to the name of the bearer, and ſometimes containing whatever pleaſes the fancy of the deviſer.

MOVEABLE, in general, any thing capable of being moved. The moveable feaſts are ſuch as are not regularly held on the ſame day of the year or month, though they are always on the ſame day of the week. Thus Eaſter, which is that moveable feaſt on which all the reſt depend, is held on the Sunday which falls upon, or next after, the firſt full-moon following the twenty-firſt of March; and all the other feaſts keep a regular and certain diſtance from it; ſuch as Septuageſima, Sexageſima, Aſh-Wedneſday, Aſcenſion-day, &c. which ſee under their proper articles.

MOVEMENT, in mechanics, a machine that is moved by clock-work.

MOULD, or Mold, in the mechanic arts, &c. a cavity cut with a deſign to give its form or impreſſion to ſome ſofter mattar applied therein, of great uſe in ſculpture, foundery, &c.

MOULD, in agriculture, a looſe kind of earth, every where obvious on the ſurface of the ground, called alſo natural or mother earth; by ſome alſo loam. The goodneſs of a mould for the purpoſes of gardening, &c. may be known, according to Miller, by the ſight, ſmell, and touch. 1. Thoſe moulds that are of a bright cheſnut or hazelly colour, are counted the beſt: of this colour are the beſt loams, and alſo the beſt natural earth; and this will be the better yet, if it cut like butter, and, does not ſtick obſtinately, but is ſhort, tolerably light, breaking into ſmall clods, is ſweet, will be tempered without cruſting or chopping in dry weather, or turning to mortar in wet. Next to that the dark grey and ruſſet moulds are accounted the beſt: but the light and dark aſh-coloured the worſt, ſuch as is uſually found on common heathy ground: the clear tawney is by no means to be approved; but that of a yellowiſh red colour is the worſt of all: this is commonly found in wild and waſte parts of the country, and for the moſt part produces nothing but goſs, furze, and fern, according as their bottoms are more or leſs of a light and ſandy, or of a ſpewey, gravel, or clayey nature. 2. All lands that are good and wholſome, will, after rain, or breaking up by the ſpade, emit a good ſmell. 3. By the touch we may diſcover whether it conſiſts of ſubſtances entirely arenaceous, or clammy; or, as it is expreſſed by Mr. Evelyn, whether it be tender, fatty, deterſive, or ſlippery; or more harſh, gritty, porous, or friable.

MOULDINESS, a term applied to bodies which corrupt in the air, from ſome hidden principle of humidity therein; and whoſe corruption ſhews itſelf by a certain white down, or lanugo, on their ſurface, which, viewed through a microſcope, appears like a kind of meadow, out of which ariſe herbs and flowers, ſome only in the bud, others full blown, and others decayed, each having its root, ſtalk, and other parts. See *Corruption* and *Vegetation*.

MOULDING, any thing caſt in a mould, or that ſeems to have been ſo, though in reality it were cut with a chiſſel, or the ax.

Moulding of figures in paſte is done as follows: take the crumb of a new-drawn white loaf, beat it, and roll it with a rolling-pin as fine and as far as it will go; then print it on the moulds; and when it has taken the ſuitable figure you deſire, dry it in a ſtove, and it will be very hard: and to preſerve it from vermin, you may mix a little powder of aloas with it.

To mould ſmall figures of jaſper-colour: oil your moulds with a fine pencil, and diverſify them with ſuch colours as you pleaſe, with gum tragacanth; if they ſpread or run, put a little of the gall of an ox, for the thicker it is, the harder it will be; then mould your paſte of the colour of jaſper, or the like; put it in to fill the mould; tie it with a wire, and take it out; repair and varniſh it, and ſet it to harden.

MOULDINGS, in architecture, projectures beyond the naked wall, column, wainſcoat, &c. the aſſemblage of which forms corniches, door-caſes, and other decorations, of architecture. See plate xxxiv.

Some mouldings are ſquare, others round, ſome are ſtreight, others curved, &c. and ſome are plain, others carved, or adorned with ſculpture, either hollowed or in relievo: ſome again are crowned with a fillet, others are without, as the doucine, talon, ovolo, torus, ſcotia, aſtragal, gula, corona, &c. See *Doucine*, &c.

MOULTING, or MEWING. See *Mewing*.

MOUND, a term uſed for a bank or rampart, or other fence, particularly that of earth.

MOUND, in heraldry, a ball or globe with a croſs upon it, ſuch as our kings are uſually drawn with, holding it in their left hands, as they do the ſceptre in the right.

MOUNT *of Piety*, certain funds or eſtabliſhments in Italy, where money is lent out, on ſmall ſecurity. We had alſo mounts of piety in England raiſed by contribution, for the benefit of people ruined by the extortions of the Jews; but we have now no other mounts of piety but pawn-brokers, who generouſly lend money upon the beſt ſecurity, from 30 to 50 per cent.

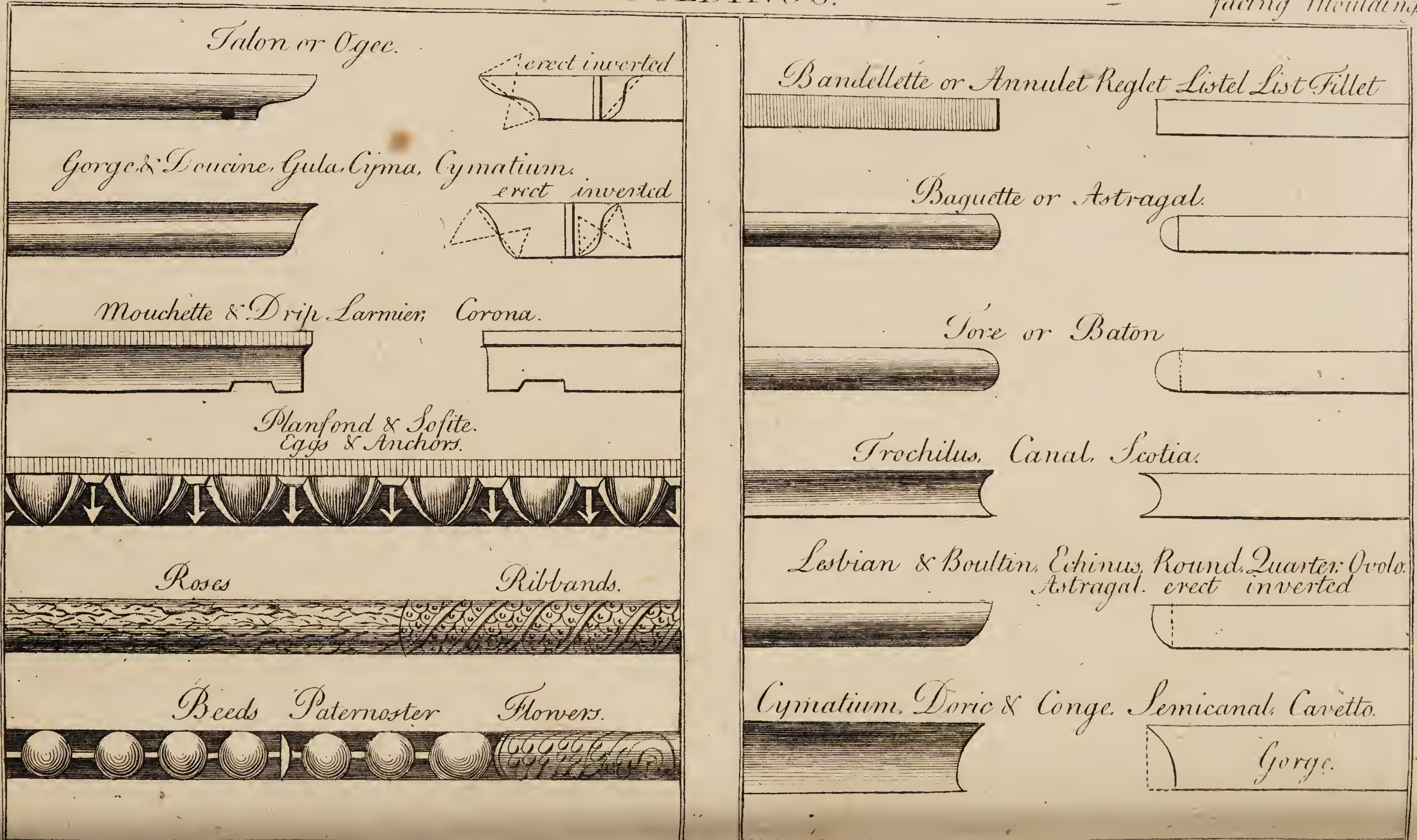
MOUNTAIN, *Mons*. a part of the earth, riſing to a conſiderable height above the level of the ſurface thereof. The origin of mountains is variouſly aſſigned by philoſophers: ſome will have them coeval with the world, and created along with it; others, among whom is Dr. Burnet, will have them to take their riſe from the deluge, urging that the extreme irregularity and diſorder viſible in them, plainly ſhews they do not come immediately out of the hand of God, but are the wrecks of the old world, broken into the abyſs. See *Deluge*.

Others again alledge, from hiſtory, that the roots of many hills being eaten away, the hills themſelves have ſubſided and ſunk into plains; whence they conclude, that where the corruption is natural, the generation is ſo too. It appears certain to many, that ſome mountains muſt have been generated gradually, and have thrown up in proceſs of time, from the ſea ſhells, &c. found in them, which they ſuppoſe may be accounted for, from a violent wind blowing the ſand, &c. into huge heaps

Plate XXXIV.

MOULDINGS.

facing Mouldings


Talon or Ogee.
erect inverted
Gorge & Doucine, Gula, Cyma, Cymatium.
erect inverted
Mouchette & Drip Larmier, Corona.
Planfond & Sofite.
Eggs & Anchors.
Roses
Ribbands.
Beeds Paternoster
Flowers.
Bandellette or Annulet Reglet Listel List Fillet
Baguette or Astragal.
Tore or Baton
Trochilus, Canal, Scotia.
Lesbian & Boultin, Echinus, Round, Quarter, Ovolo.
Astragal. erect inverted
Cymatium, Doric & Conge, Semicanal, Cavetto.
Gorge

heaps, which were made into a maſs by the rain, &c. The origin of mountains, in the opinion of Mr. Ray, ſeems to have been from exploſions, by means of ſubterraneous fires; and he thinks it very probable, that they all have vaſt hollows beneath them; and that this might have been the means uſed at the creation, to make the dry land appear, he thinks no way diſſonant to reaſon, ſince hiſtory proves that fires have raged in ſubterraneous caverns under the ſeas; and there is no natural impoſſibility in fires ſubſiſting in ſuch caverns, even when the earth was all over covered with water, as at the firſt creation.

Mountains appear to many, defects and blemiſhes in the earth: but they are truly of the utmoſt uſe and neceſſity to the well-being both of man and other animals. They ſerve as ſcreens to keep off the cold and nipping blaſts of the northern and eaſtern winds; they ſerve for the production of a great number of vegetables and minerals, which are not found in any other ſoil; the long ridges and chains of lofty and topping mountains being generally found to run from eaſt to weſt, ſerve to ſtop the evagation of the vapours towards the poles, without which they would all run from the hot countries, and leave them deſtitute of rain. Mr. Ray adds, that they condenſe theſe vapours, like alembic heads, into clouds, and ſo, by a kind of external diſtillation, give origin to ſprings and rivers; and, by amaſſing, cooling, and conſtipating them, turn them into rain, and by that means render the fervid region of the torrid zone habitable.

MOUNTING, in the mechanic arts, ſomething that ſerves to raiſe or ſet off a work: thus, the frame and its dependences make the mounting of a looking-glaſs; the hilt, the mounting of a ſword; the fuſt, or but, the mounting of a carabine, muſquet, &c. and the mounting of a fan, is the ſticks which ſerve to open and ſhut it.

MOUNTING, in military affairs, ſignifies going upon duty: thus, mounting a breach, is running up to it; mounting the guard, is going upon guard; and mounting the trenches is going upon duty in the trenches: but mounting a cannon, mortar, &c. is the ſetting it on its carriage, or the raiſing its mouth.

MOUSE, in zoology, a ſpecies of mus, with a long and almoſt naked tail, and a white belly.

MOUTH, in anatomy, a part of the face, conſiſting of the lips, the gums, the inſides of the cheeks, the palate, the ſalival glands, the os hyoides, the uvula, and the tonſils, which ſee under their proper articles.

MUCILAGE, in pharmacy, in general any viſcid and glutinous liquor.

MUCILAGE alſo denotes a thick pituitous matter, evacuated with the urine, in the gravel and dyſuria.

MUCILAGE alſo imports the liquor which principally ſerves to moiſten the ligaments and cartilages of the articulations; and is ſupplied by the mucilaginous glands.

MUCILAGINOUS GLANDS, in anatomy, a very numerous ſet of glands, ſerving to ſecrete the mucilage of the joints.

MUCOUS GLANDS, in anatomy, three glands, which empty themſelves into the urethra; ſo called by their firſt diſcoverer, Mr. Cowper, from the tenacity of the liquor which they ſeparate.

MUCUS, a mucilaginous liquor ſeparated by the mucous glands, and the noſtrils.

MUFFLE, in metallurgy, an arched cover, reſiſting the ſtrongeſt fire, and made to be placed over coppels and teſts, in the operations of aſſaying, to preſerve them from the falling of coals and aſhes into them; though at the ſame time of ſuch a form as is no hindrance to the action of the air and fire on the metal, nor to the inſpection of the aſſayer.

MUFTI, or MUPHTI, the chief of the eccleſiaſtical order, or primate, of the muſſulman religion. The authority of the mufti is very great in the Ottoman empire; for even the ſultan himſelf, if he would preſerve any appearance of religion, cannot, without hearing his opinion, put any perſon to death, or ſo much as inflict any corporal puniſhment. The election of the mufti is ſolely in the grand ſignior, who preſents him with a veſt of rich ſables, &c. If he is convicted of treaſon, or any great crime, he is put into a mortar, kept for that purpoſe in the Seven Towers at Conſtantinople, and pounded to death.

MUGGLETONIANS, a religious ſect, which aroſe in England, about the year 1657; ſo denominated from their leader Lodowick Muggleton, a journeyman taylor, who, with his aſſociate Reeves, ſet up for great prophets, pretending, as it is ſaid, to have an abſolute power of ſaving and damning whom they pleaſed;

and giving out, that they were the two laſt witneſſes of God that ſhould appear before the end of the world.

MUGWORT, in botany, the ſame with the artemiſia. See *Artemiſia*.

MUID, a large meaſure, in uſe among the French, for things dry. The muid is no real veſſel uſed as a meaſure, but an eſtimation of ſeveral other meaſures, as the ſeptier, mine, minot, buſhel, &c.

MUID is alſo one of the nine caſks, or regular veſſels uſed in France, to put wine and other liquors in. The muid of wine is divided into two demi-muids, four quarter-muids, and eight half-quarter muids, containing thirty-ſix ſeptiers.

MULATTO, a name given in the Indies to thoſe who are begotten by a negro man on an Indian woman, or an Indian man on a negro woman.

MULBERY, *Morus*, in botany, a genus of plants. There are ſeveral ſpecies of this tree; but two only are generally cultivated, called the black and white mulberry. The black mulberry grows naturally in Perſia, from whence it was firſt brought to the ſouthern parts of Europe; but is now become common in every part of Europe, where the winters are not very ſevere: for in the northern parts of Sweden, theſe trees will not live in the open air; and in ſeveral parts of Germany they are planted againſt walls, and treated in the ſame way as peach and other tender fruits are here. Theſe trees are generally of both ſexes, having male flowers or katkins, on the ſame tree with the fruit; but it often happens that ſome of the trees which are raiſed from ſeeds, have only male flowers, and produce no fruit; ſo that thoſe who plant theſe trees for their fruit, ſhould never make choice of ſuch as have been propagated by ſeeds, unleſs they have ſeen them produce fruit in the nurſery. It is alſo the ſureſt way to mark ſuch trees as are fruitful in the nurſery, at the time when their fruit is upon them, becauſe thoſe trees which are propagated by layers, are ſometimes of the male ſort.

The old mulberry trees are not only more fruitful than the young, but their fruit are much larger and better flavoured; ſo that where there are any of theſe old trees, it is the beſt way to propagate from them, and to make choice of thoſe branches which are moſt fruitful. The uſual method of propagating theſe trees, is by laying down their branches, which will take root in one year, and are then ſeparated from the old trees; but as the moſt fruitful branches are often ſo far from the ground as not to be layed, unleſs by raiſing of boxes or baſkets of earth upon ſupports for this purpoſe, ſo the better way is to propagate them by cuttings, which, if rightly choſen and ſkilfully managed, will take root very well; and in this method there will be no difficulty in having them from trees at a diſtance, and from the moſt fruitful branches. Theſe cuttings ſhould be the ſhoots of the former year, with one joint of two years wood to their bottom; the cuttings ſhould not be ſhortened, but planted their full length, leaving two or three buds above ground. The beſt ſeaſon for planting them is in March, after the danger of hard froſt is over; they ſhould be planted in light rich earth, preſſing the ground pretty cloſe about them; and if they are covered with glaſſes, it will forward their putting out roots; but where there is no ſuch conveniency, the ground about them ſhould be covered with moſs to prevent its drying; and where this is carefully done, the cuttings will require but little water, and will ſucceed much better than with having much wet. If the cuttings ſucceed well and make good ſhoots, they may be tranſplanted the following ſpring into a nurſery, where they ſhould be regularly trained to ſtems, by fixing down ſtakes to each, to which the principal ſhoots ſhould be faſtened; and moſt of the lateral branches ſhould be cloſely pruned off, leaving only two or three of the weakeſt to detain the ſap for the augmentation of the ſtem; for when they are quite diveſted of the ſide ſhoots, the ſap is mounted to the top, ſo that the heads of the trees grow too faſt for the ſtems, and become too weighty for their ſupport. In about four years growth in the nurſery, they will be fit to tranſplant where they are to remain; for theſe trees are tranſplanted with greater ſafety while young, than when they are of a large ſize.

The white mulberry is commonly cultivated for its leaves to feed ſilk worms, in France, Italy, &c. though the Perſians always make uſe of the common black mulberry for that purpoſe; and it is ſaid that the worms fed with thoſe of the black produce much better ſilk than thoſe fed with the white; but it is to be obſerved, that the leaves of the black ſort ſhould never be given to the worms, after they have eaten for ſome time of the white, leſt the worms ſhould burſt, which is often the caſe when they are thus treated.

The trees which are deſigned to feed ſilk worms, ſhould never be ſuffered to grow tall, but rather kept in a ſort of hedge; and inſtead of pulling off the leaves ſingly, they ſhould be ſheared off, together with their young branches, which is much ſooner done, and not ſo injurious to the tree.

This white ſort may be propagated either from the ſeeds or lays of the black mulberry, and is equally hardy; but the moſt expeditious method of raiſing theſe trees in quantity, is from the ſeeds, which may be procured in plenty from the ſouth of France and Italy. The beſt way to ſow theſe ſeeds in England, is to make a moderate hot bed, which ſhould be arched over with hoops, and covered with mats; upon this bed the ſeeds ſhould be ſown in the middle of March, and covered over with light earth about a quarter of an inch deep: in very dry weather the bed muſt be frequently watered, and in the heat of the day ſhaded with mats, and alſo covered in the nights when they are cold. With this management the plants will come up in five or ſix weeks, and as they are tender when they firſt appear, ſo they muſt be guarded againſt froſty mornings, which often happens in May. During the ſummer they muſt be kept clean from weeds, which is all the culture they require: but there muſt be care taken of them the firſt winter, eſpecially to cover them in autumn, when the firſt froſts come, which will kill the tender plants to the ground, if they are not protected; the following March theſe plants ſhould be tranſplanted in the nurſery, to get ſtrength, where they may remain two or three years, and then ſhould be removed where they are to continue.

This mild dulco-acid fruit is ſometimes uſed medicinally, as a refrigerant, antiſeptic, relaxant, attenuant, and aperient. Boerhaave looks upon the continued uſe of mulberries as one of the principal remedies in caſes of obſtruction and viſcidity, and in putrid diſorders; and Hoffman gives inſtances of ſome obſtinate diſeaſes being cured by them: this fruit apparently promotes the alvine and urinary excretions; and in ſome fevers, where watery liquors run off almoſt unchanged, the urine is impregnated with the colour of the juice of the berries. To perſons of a bilious temperament and rigid fibres, and where the habit is diſpoſed, naturally or from extrinſic cauſes, to an inflammatory or putreſcent ſtate, their moderate and even plentiful uſe, is ſalubrious: by thoſe of a cold inactive diſpoſition, where the veſſels are lax, the circulation languid, and the digeſtion weak, this fruit ſhould be taken very ſparingly.

MULCT, a fine of money laid upon a man, who has committed ſome fault or miſdemeanor.

MULE, in zoology, a mongrel kind of quadruped, uſually generated between an aſs and a mare, and ſometimes between a horſe and a ſhe-aſs. The mule is a ſort of a monſter, of a middle nature between its parents, and therefore incapable of propagating its ſpecies; ſo careful is nature to avoid filling the world with monſters. Mules are chiefly uſed in countries where there are rocky and ſtony roads, as about the Alps, Pyrenees, *&c.* Great numbers of them are kept in theſe places; they are uſually black, ſtrong, well-limbed, and large, being moſtly bred out of the fine Spaniſh mares: the mules are ſometimes fifteen or ſixteen hands high. No creatures are ſo proper for carrying large burdens, and none ſo ſure-footed. They are much ſtronger for draught than our horſes, and are often as thick-ſet as our dray horſes; and they will travel ſeveral months together, with ſix or eight hundred weight upon their backs: they are much hardier and ſtronger than horſes, and will live and work twice the age of a horſe; and thoſe mules which are light are fitter for riding than horſes, as to the walk and trot; but they are apt to gallop rough.

MULIER, in law, ſignifies the lawful iſſue born in wedlock, though begotten before.

MULLER, or MULLAR, a ſtone flat and even at the bottom, but round a-top, uſed for grinding of matters on a marble. The apothecaries uſe mullers to prepare ſome of their teſtaceous powders, and painters for their colours, either dry or in oil.

MULLER is alſo an inſtrument uſed by the glaſs-grinders.

MULLET, *Mugil*, in ichthyology, a genus of the acanthopterygious fiſhes, the head of which is of a depreſſed form in the anterior part, and the body oblong and compreſſed.

MULLET, or MOLLET, in heraldry, a bearing in form of a flat, or rather of the rowel of a ſpur, which it originally repreſented.

MULSUM, *Mulſe*, a liquor made of wine and honey, or even of wine and water.

MULTIPLE, *Multiplex*, in arithmetic, a number which comprehends ſome other ſeveral times; thus 6 is a multiple of 2, and 12 is a multiple of 6, 4, and 3, comprehending the firſt twice, the ſecond thrice, &c.

MULTIPLE RATIO, or PROPORTION, is that which is between multiples. If the leſſer term of the ratio be an aliquot part of the greater, the ratio of the greater to the leſs is called multiple; and that of the leſs to the greater ſub-multiple. A ſub-multiple number is that contained in the multiple; thus, the numbers 1, 2, and 3, are ſub-multiples of 9. Duple, triple, &c. ratios, as alſo ſubduples, ſubtriples, &c. are ſo many ſpecies of multiple and ſub-multiple ratios. See *Ratio*.

MULTIPLICAND, in arithmetic, one of the factors in the rule of multiplication; being that number which is given to be multiplied by another, which is called the multiplicator, or multiplier.

MULTIPLICATION, in arithmetic, the art of multiplying one number by another, to find the product, or it is a compendious method of performing the operation of addition.

There are ſome abbreviations of this art. Thus to multiply a number by 5, you need only add a cypher to it, and then halve it. To multiply by 9, add a cypher to the given multiplicand, and ſubtract the multiplicand therefrom, the remainder muſt certainly be nine times the number which was given to be multiplied. To multiply by 15, firſt multiply it by 10, which is done by annexing a cypher to it, to which add the product by 5, the ſum will be the required product.

Expedients for the more eaſy and expeditious multiplying large ſums are ſliding rules, and Nepier's bones; the want of which may be ſupplied by tabulating the multiplicand.

Where the multiplicator is not compoſed wholly of integers, as it frequently happens in buſineſs, where pounds are accompanied with ſhillings and pence, yards with feet and inches; the method of procedure, if you multiply by a ſingle digit, is the ſame as in ſimple numbers, only carrying from one denomination to another, as the nature of each ſpecie requires. E. gr. to multiply 123 l. 14 s. 9 d. 3 q. by 5; ſay, 5 × 3 q. = 15 q; that is, 3 d. 3 q. write down the 3 q. and proceed, ſaying 5 × 9 = 45 d. that is, 3 s. 9 d. ſet down the 9 d. and proceed in the ſame manner through the reſt.

If you multiply by two or more digits, the methods of procedure are as follow: ſuppoſe I have bought 37 ells of cloth at 13*l.* 16*s.* 6*d.* per ell, and would know the amount of the whole. I firſt multiply 37 ells by the 13*l.* in the common method of multiplication by integers, leaving the two products without adding them up; then multiply the ſame 37 ells by 16*s.* leaving, in the like manner, the two products without adding them. Laſtly, I multiply the ſame 37 by the 6*d.* the product whereof is 222*d.* which divided by 12, gives 18*s.* 6*d.* and this added to the products of the 16*s.* the ſum will be 610*s.* 6*d.* the amount of 37 ells at 16*s.* 6*d.* the ell. Laſtly, the 610*s* 6*d*, are reduced into pounds, by dividing them by 20: upon adding the whole, the amount of 37 ells at 13*l.* 16*s.* 6*d.* per ell will be found as in the following:

	37 ells At 13 pounds.	37 ells. At 16 ſhillings.
	111	222
	37	37
	30.10.6	18.6
Product	511.10.6	610.6

37 ells.
At 6 pence.

222

Or thus: ſuppoſe the ſame queſtion: reduce the 13*l.* 16*s.* into ſhillings, the amount will be 276*s.* reduce 276*s.* into pence, adding 6, the amount will be 3318*d.* Multiply the 37 ells by 3318, the amount will be 122766*d.* which divided by 12, and the quotient 10230*s.* 6*d.* reduced into pounds by cutting off the laſt figure on the right hand, and taking half of thoſe on the left, yields 511*l.* 10*s.* 6*d.* the price of the 37 ells as before. Though by theſe two methods any multiplication of this kind may be effected, yet the operations being long, we ſhall add a third much ſhorter.—Suppoſe the ſame queſtion: Multiply the price by the factors of the multiplicator, if reſolvable into factors; if not, by thoſe that come neareſt it; adding the price for the odd one, or multiplying it by what the factors want of the multiplier. So the work will ſtand thus: 37 ells at 16*s.* 6*d.*: $6\times6=36\times1=37$.

Therefore	—		6
	82	19	0
	497	14	0
	13	16	6
	511	10	6

The price of the 37 ells

But the moſt commodious is the fourth method, which is performed by aliquot and aliquant parts—where you are to obſerve by the way, that aliquot parts of any thing are thoſe contained ſeveral times therein, and which divide without any remainder; and that aliquant parts are other parts of the ſame thing compoſed of ſeveral aliquot parts.

To multiply by aliquot parts, is, in effect, only to divide a number by 3, 4, &c. which is done by taking a 3d, 4th, 5th, &c. from the number to be multiplied. Example.—To multiply v. g. by 6*s.* 8*d.* Suppoſe I have 347 ells of ribband at 6*s.* 8*d.* per ell.

Multiplicand	—	347 ells
Multiplicator	—	6*s.* 8*d.*
Product	—	115*l*, 13*s.* 4*d.*

The queſtion being ſtated, take the multiplicator, which according to the table of aliquot parts, is the third; and ſay, the third of 3 is 1, ſet down 1; the third of 4 is 1, ſet down 1, remains 1, that is 1 ten, which added to 7 makes 17; then the third of 17 is 5, remain 2 units, i. e, two thirds, or 13*s.* 4*d.* which place after the pounds. Upon numbering the figures, 1, 1, and 5, integers, and 13*s.* 4*d.* the aliquot part remaining, I find the ſum 115*l.* 13*s.* 4*d.*

For multiplication by aliquant parts: ſuppoſe I would multiply by the aliquant part 19*s.* I firſt take for 10*s.* half the multiplicand; then for 5, which is the fourth, and laſtly, for 4 which is the fifth. The products of the three aliquot parts that compoſe the aliquant part being added together, the ſum will be the total product of the multiplication, as in the following example; which may ſerve as a model for multiplication by any aliquant part that may occur.

Multiplicand	-	356 ells.
Multiplier	- -	19*s.*
		178*l.* for 10*s.*
		89*l.* for 5*s.*
		71*l.* 4*s.* for 4*s.*
Product	- -	338*l.* 4*s.*

For the Proof of MULTIPLICATION. The operation is right when the product, divided by the multiplier, quotes the multiplicand; or divided by the multiplicand, quotes the multiplier. A readier way, though not abſolutely to be depended on, is thus: Add up the figures of the factors, caſting out the nines: and ſetting down the remainders of each, theſe multiplied together, and out of their product caſt away the nines, and ſet down the remainder; if this remainder agree with the remainder of the product, after the nines are caſt out, the work is right. This method of proving multiplication by caſting out the nines, depends upon a peculiar property of the number 9, which no other digit has, viz. that the remainder will be exactly the ſame, whether we divide any number whatſoever by 9, or firſt add together the digits compoſing that number, and then divide the ſum by 9. This premiſed, let F and *f* repreſent any propoſed factors or numbers that are to be multiplied together; then will $F\times f$ be the product: let alſo m and n repreſent the reſpective remainders after having divided each of thoſe factors by 9, or, which is the ſame thing, after having caſt out the nines: then it is evident that $F-m$, $f-n$, and $\overline{F-m}\times\overline{f-n}$ being reſpectively divided by nine, will exactly terminate without any remainder; but $\overline{F-m}\times\overline{f-n}$ is equal to $F\times f-Fm-fn+mn$, therefore Ff being divided by 9, muſt leave the ſame remainder as $m\ n$ divided by 9; or the ſum of the digits in the product $m\,n$ muſt, when divided by 9, leave the ſame remainder as the ſum of the digits in the product $F\,f$ would when divided by 9.

Croſs MULTIPLICATION, otherwiſe called duodecimal arithmetic, is an expeditious way of multiplying feet and inches by feet and inches. This method is uſed in meaſuring, &c.—The method is thus:

Suppoſe 5 feet 3 inches to be multiplied by 2 feet 4 inches: ſay, 2 times 5 feet is 10 feet, and 2 times 3 is ſix inches: again, 4 times 5 is 20 inches, or 1 foot 8 inches; and 4 times 3 is twelve parts, or 1 inch: the whole ſum makes 12 feet 3 inches. In this manner you may manage yards, feet, inches, and parts, &c.

F.	I.
5	3
2	4
10	6
1	8
	1
12	3

MULTIPLICATION *of Algebra.*—In multiplication the general rule of the ſigns is, that when the ſigns of the factors are alike (i. e. both + or both —) the ſign of the product is + ; but when the ſigns of the factors are unlike, the ſign of the product is —.

Caſe 1. When any poſſitive quantity, $+a$, is multiplied by any poſſitive number, $+n$, the meaning is, that $+a$ is to be taken as many times as there are units in n ; and the product is evidently na.

Caſe 2. When $-a$ is multiplied by n then $-a$ is to be taken as often as there are units in n ; and the product muſt be $-na$.

Caſe 3. Multiplication by a poſſitive number implies a repeated addition : but multiplication by a negative implies a repeated ſubtraction. And when $+a$ is to be multiplied by $-n$, the meaning is that $+a$ is to be ſubtracted as often as there are units in n ; therefore the product is negative, being $-na$.

Caſe 4 When $-a$ is to be multiplied by $-n$, then $-a$ is to be ſubtracted as often as there are units in n ; but to ſubtract $-a$ is equivolent to adding $+a$, conſequently the product is $+na$. The ſecond and fourth caſes may be illuſtrated in the following manner :

It is evident that $+a-a=0$ therefore if we multiply $+a-a$ by n, the product muſt vaniſh or be 0, becauſe the factor $a-a$ is 0. The firſt term of the product is $+na$ (by caſe 1.) Therefore the ſecond term of the product muſt be $-na$, which deſtroys $+na$; ſo that the whole product muſt be $+na-na=0$. Therefore, $-a$ multiplied by $+n$ gives $-na$.

In the like manner if we multiply $+a-a$ by $-n$, the firſt term of the product being $-na$, the latter term of the product muſt be $+na$, becauſe the two together muſt deſtroy each other, or their amount be 0, ſince one of the factors (viz $a-a$) is 0. Therefore, $-a$ multiplied by $-n$ muſt give $+na$.

If the quantities to be multipled are ſimple, find the ſign of the product by the laſt rule ; after it place the product of the co-efficients, and ſet down all the letters after one another as before.

Examples.

$$\begin{array}{r|r|r} \text{Mult.}\ +a & -2a & +6x \\ \text{By}\ +a & +4b & -5a \\ \hline \text{Product}\ +ab & -8ab & -30ax \end{array}$$

$$\begin{array}{r|r} \text{Mult.}\ -8x & +3ab \\ \text{By}\ -4a & -5ac \\ \hline \text{Product}\ +32ax & -15aabc. \end{array}$$

To multiply compound quantities, you muſt multiply every part of the multiplicand by all the parts of the multiplier taken one after another, and then collect all the products into one ſum : the ſum ſhall be the product required.

$$\begin{array}{ll|l} \text{Mult.} & a+b & 2a-3b \\ \text{By} & a+b & 4a+5b \\ \hline \text{Prod.} & \left\{\begin{array}{r} aa+ab \\ +ab+bb \end{array}\right. & \left\{\begin{array}{r} 8aa-12ab \\ +10ab-15bb \end{array}\right. \\ \hline \text{Sum} & aa+2ab+bb & 8aa+2ab-15bb \end{array}$$

$$\begin{array}{ll|l} \text{Mult.} & 2a-4b & xx-ax \\ \text{By} & 2a+4b & x+a \\ \hline \text{Prod.} & \left\{\begin{array}{r} 4aa-8ab \\ +8ab-16bb \end{array}\right. & \left\{\begin{array}{r} xxx+axx \\ +axx-aax. \end{array}\right. \\ \hline \text{Sum} & 4aa\ldots0.-16bb & xxx\ldots0\ldots-aax \end{array}$$

$$\begin{array}{ll} \text{Mult.} & aa+ab+bb \\ \text{By} & a-b \\ \hline \text{Prod.} & \left\{\begin{array}{r} aaa+aab+abb \\ -aab-abb-bbb \end{array}\right. \\ \hline \text{Sum} & aac\ldots0\ldots0\ldots\ldots-bbb \end{array}$$

Products that ariſe from the multiplication of 2, 3, or more quantities, as, a, b, c, are ſaid to be of 2, 3, or more dimenſions ; and thoſe quantities are called factors or roots.

If all the factors are equal, then theſe products are called powers ; as aa or aaa are powers of a. Powers are expreſſed ſometimes by placing, above the root to the right hand, and figure expreſſing the number of factors that produce them, thus :

$$\left.\begin{array}{l} a \\ aa \\ aaa \\ aaaa \\ aaaaa \end{array}\right\}\left\{\begin{array}{l} \text{1ſt} \\ \text{2d} \\ \text{3d} \\ \text{4th} \\ \text{5th} \end{array}\right\}\begin{array}{l} \text{power of the} \\ \text{root, } a \text{ and is} \\ \text{generally ex-} \\ \text{preſſed thus :} \\ \end{array}\left\{\begin{array}{l} a^1 \\ a^2 \\ a^3 \\ a^4 \\ a^5 \end{array}\right.$$

Theſe figures which expreſs the number of factors that produce powers are called their indices or exponents ; thus 2 is the index of a^2. And powers of the ſame root are multiplied by adding their exponents thus : $a^2\times a^3=a^5$. $a^4\times a^3=a^7$. $a^3\times a=a^4$.

Sometimes it is uſeful not actually to multiply compound quantities, but to ſet them down upon the ſign of multiplication ($\times$) between them, drawing a line over each of the compound factors. Thus $\overline{a+b}\times\overline{a-b}$ expreſſes the product of $a+b$ multiplied by $a-b$.

MULTIPLICATION *of Surds.* When the quantities are pure ſurds of the ſame kind, multiply them together, and to their product prefix their radical ſign.

Thus $\sqrt{b} \times \sqrt{a} = \sqrt{ba}$, and $\sqrt{ba + aa} \times \sqrt{ca} = \sqrt{bcaa + dcaa}$.

If the ſurd quantities of the ſame kind are joined to rational quantities, then multiply the rational into the rational, and the ſurd into the ſurd, and join their products together. Thus $d\sqrt{bc} \times 3b\sqrt{a} = 3db\sqrt{bca}$, and $5cd\sqrt{ba + da} \times 3a\sqrt{ca} = 15cda\sqrt{bcaa + dcaa}$.

MULTIPLICATOR, or MULIPLIER, in arithmetic, a number multiplying another called the multiplicand.

MULTIPLYING GLASS, in optics, one wherein objects appear increaſed in number.

MULTISILOQUOUS PLANTS, thoſe which have after each flower many diſtinct, long, ſlender, ſiliquæ, or pods, in which their ſeed is contained: ſuch are bear's foot, columbine, houſe-leek, navel-wort, orpine, &c.

MULTITUDE, an aſſemblage or collection of a great number of diſtinct perſons or things: thus we ſay, a multitude of men, of horſes, of trees, &c.

MUM, a kind of malt-liquor, much drank in Germany, and chiefly brought from Brunſwic, which is the place of moſt note for making it. The proceſs of brewing mum, as recorded in the townhouſe of that city, is as follows: Take ſixty-three gallons of water that has been boiled till one third part is conſumed, and brew it with ſeven buſheis of wheaten malt, one buſhel of oat malt, and one buſhel of ground beans: when it is tunned, the hogſhead muſt not be filled too full at firſt: as ſoon as it begins to work, put into it three pounds of the inner rind of fir; one pound of the tops of fir and beech; three handfuls of carduus benedictus; a handful or two of the flowers of roſa-ſolis; add burnet, betony, marjoram, avens, penny-royal, and wild thyme, of each a handful and a half; of elder-flowers, two handfuls or more; ſeeds of cardamum bruiſed, thirty ounces; barberries bruiſed, one ounce; when the liquor has worked a while, put the herbs and ſeeds into the veſſel; and, after they are added, let it work over as little as poſſible; then fill it up: laſtly, when it is ſtopped, put into the hogſheed ten new-laid eggs unbroken; ſtop it up cloſe, and drink it at two years end. Our Engliſh brewers, inſtead of the inner rind of fir, uſe cardamum, ginger, and ſaſſafras; and alſo add elecampane, madder, and red ſanders.

MUMMY, a body embalmed or dried, in the manner uſed by the ancient Egyptians: or the compoſition with which it is embalmed. There are two kinds of bodies denominated mummies: the firſt are only carcaſes dried by the heat of the ſun, and by that means kept from putrefaction: theſe are frequently found in the ſands of Lybia. Some imagine that theſe are the bodies of deceaſed people buried there on purpoſe to keep them entire without embalming; others think they are the carcaſes of travellers who have been overwhelmed by the clouds of ſand raiſed by the hurricanes frequent in thoſe deſarts. The ſecond kind of mummies are bodies taken out of the catacombs, near Cairo, in which the Egyptians depoſited their dead, after embalming.

MUMMY, among gardeners, a kind of wax uſed in grafting and planting the roots of trees.

MUNDIC, in natural hiſtory, a metallic mineral more commonly called marcaſite.

* MUNICH, a very large town of Germany, and the capital of Bavaria. It is one of the handſomeſt cities of Germany, and is ſurrounded with thick walls, deep ditches, and bulwarks. The ſtreets are broad and regular, the houſes well built, and painted on the outſide. The elector's palace is ſeated on the extremity of the city, and has two thouſand and ſixty windows, twenty great halls, eleven courts, nine galleries, ſixteen kitchens, and twelve cellars. It is one of the moſt magnificent and moſt commodious palaces in Europe. In 1729 part of it was conſumed by fire. However, the part that was burnt was ſoon rebuilt. The cabinet of rarities, the library, the arſenal, and the gardens of the elector, deſerve attention. In the church of Notre Dame, which is the cathedral, there are twenty-four large columns, twenty-five chapels, and thirty altars; the two towers, and the tomb of the emperor Lewis of Bavaria are the moſt remarkable in this city. The Auſtrians, in 1742, laid ſiege to this city, which was obliged to ſurrender, and the inhabitants were forced to pay twenty-five thouſand franks, by way of contribution. It is a place of little trade. It is thirty miles ſouth-eaſt of Augſburg, and one hundred and ſeventy-five ſouth-weſt of Prague. Lat. 48. 22. N. Long. 11. 41. E.

MUNICIPAL, in the Roman civil law, an epithet which ſignifies, inveſted with the rights and privileges of Roman citizens. Thus the municipal cities were thoſe

hoſe whoſe inhabitants were capable of enjoying civil offices in the city of Rome.

MUNIMENTS, or MINIMENTS, the writings relating to a perſon's inheritance, by which he is enabled to defend his title to his eſtate: or, in a more general ſenſe, all manner of evidences, ſuch as charters, feoffments, releaſes, &c.

MUNIMENT-HOUSE, a little ſtrong room in a cathedral, college, or univerſity, deſtined for keeping the ſeal, charters, &c. of ſuch cathedral, college, &c.

MURAL, in general, any thing belonging to a wall, which the Latins call *murus*.

MURAL ARCH, a wall, or walled arch, placed exactly in the plane of the meridian, for fixing a large quadrant, ſextant, or other inſtrument, in order to obſerve the meridian altitudes of the heavenly bodies.

MURAL CROWN. See *Crown*.

MURDER, or MURTHER, in law, the wilful and felonious killing a perſon from premeditated malice; provided the party wounded, or otherwiſe hurt, die within a year and a day after the fact was committed.

MUREX, in natural hiſtory, a genus of univalve or ſimple ſhells, without any hinge, formed of a ſingle piece, and beſet with tubercles or ſpines: the mouth is large and oblong, and has an expanded lip, and the clavicle is rough.

MURRAIN, or GARGLE, a contagious diſeaſe among cattle. The moſt remarkable murrain is that mentioned in the Philoſophical Tranſactions, which ſpread through Swiſſerland, Germany, into Poland, &c.

The contagion ſeemed to propagate itſelf, in form of a blue miſt, which fell on the graſs where the cattle grazed, when whole herds, forbearing their food, almoſt died away in twenty-four hours. Upon diſſection were found large corrupted ſpleens, ſphacelous and corroded tongues, &c. And even the perſons who managed them were infected, and died like the beaſts. Some imagined it had its riſe from noxious vapours thrown out of the earth, in three earthquakes perceived in the neighbourhood of the place where it began; though Dr. Slare thinks it rather owing to ſwarms of volatile inſects. The antidote for the ſound, and medicine for the ſick, was equal parts of ſoot, gunpowder, brimſtone, and ſalt, with as much water as would waſh it down: a ſpoonful was the doſe.

MURREY, in heraldry, a kind of purple colour. See *Sanguine*.

MUS, in zoology, a genus of quadrupeds, of the order of the agriæ, the characters of which are theſe: the fore-teeth are acute, and there are no canine teeth at all, the feet are divided, and the ears naked.

Of this genus there are a great many ſpecies, known by diſtinct Engliſh names, as the rat, mouſe, dor-mouſe, or ſorex, citille, agutis, guinea-pig, &c.

MUSA, the plantain tree, in botany.

MUSCADINE, a rich kind of wine, of the growth of Provence and Languedoc in France.

MUSCLE, *Muſculus*, in anatomy, a part of the human body, deſtined to move ſome other part, and that in general by a voluntary motion, or ſuch as is dictated by the will; being compoſed principally of fleſh and tendinous fibres, which have alſo veſſels of all kinds, as arteries, veins, nerves, and lymphatics; all which are ſurrounded by, or incloſed in, one common membrane.

Action of the MUSCLES. This conſiſts in the contraction of its belly, after whatever manner that is done: by this means its extremities approach toward each other; and by this means alſo the part in which the end of the muſcle is inſerted, moves as if it were drawn by a cord.

MUSCLE, *Mytulus*, in natural hiſtory, a ſhell compoſed of two valves, of an oblong figure, and ſhutting cloſe all the way; the valves are both convex, and of a ſimilar ſhape; and the animal inhabiting it is called a tethys.

MUSCULAR, or MUSCULOUS, in anatomy, ſomething relating to, or partaking of the nature of a muſcle. See *Muſcle*.

MUSES, certain fabulous divinities amongſt the Pagans, ſuppoſed to preſide over the arts and ſciences: for this reaſon it is uſual for the poets at the beginning of a poem, to invoke theſe goddeſſes to their aid. Some reckon the muſes to be no more than three, viz. Mneme, Aœde, and Melete; that is, memory, ſinging, and meditation; but the moſt ancient authors, and particularly Homer and Heſiod, reckon nine; Clio, which means glory; Euterpe, pleaſing; Thalia, flouriſhing; Melpomene, attracting; Terpſichore, rejoicing the heart; Erato, the amiable; Polyhymnia, a multitude of ſongs; Urania, the heavenly; and Calliope, ſweetneſs of voice. To Clio, they attributed the invention of hiſtory; to Melpomene, tragedy; to Thalia, comedy; to Euterpe, the uſe of the flute; to Terpſichore, the harp; and to Erato, the lyre and lute; to Calliope, heroic verſe; to Urania, aſtrology; and to Polyhymnia, rhetoric. The muſes are painted young, handſome, and modeſt, agreeably dreſſed, and crowned with flowers Their buſineſs was to celebrate the victories of the gods, and to inſpire and aſſiſt the poets; hence the cuſtom of invoking their aid at the beginning of a poem. It muſt not, however, be imagined, that the ancient poets themſelves ever conſidered the deities thus invoked as divine perſons, from whom they expected any real help. Their addreſſes to the muſes are mere allegories, and manners of expreſſing themſelves poetically, as when they make gods of ſleep, of fame, of virtue, and other natural and moral things; under the name of muſe they prayed for the genius of poetry, and all the talents neceſſary for a happy execution of what they had undertaken.

MUSEUM, a name which originally ſignified a part of the palace of Alexandria, which took up at leaſt one fourth of that city. This quarter was called the Muſeum, from its being ſet apart for the muſes and the ſtudy of the ſciences. Here were lodged and entertained the men of learning, who were divided into many companies or colleges, according to the ſciences of which they were the profeſſors; and to each of theſe houſes or colleges was allotted a handſome revenue. The foundation of this eſtabliſhment is attributed to Ptolemy Philadelphus, who here placed his library. Hence the word muſeum is now applied to any place ſet apart as a repoſitory for things that have an immediate relation to the arts. The Britiſh muſeum of curioſities at Montague-houſe was eſtabliſhed in 1753.

MUSHROOM, *fungus*, in botany, a genus of imperfect plants, compoſed of a pedicle, crowned with a broad head, convex and ſmooth at the top, and hollow, foliated, lamellated, or fiſtulous on the under ſide. Mr. Miller directs the following method of cultivating them. If you have no beds of your own that produce them, you ſhould look abroad in rich paſtures, during the months of Auguſt and September, till you find them; and then opening the ground about their roots, you will often find the earth full of ſmall white knobs, which are the offſets from the muſhrooms: theſe ſhould be carefully gathered, and preſerved dry, with the earth about them. The muſhroom-beds ſhould be made of dung in which there is good ſtore of litter. Theſe beds ſhould be made on dry ground, and the dung be laid upon the ſurface about a foot thick, two feet and a half broad, and of a length in proportion to the quantity of muſhrooms deſired: it ſhould be covered about four inches deep with ſtrong earth; upon this lay more dung, about ten inches thick; then another layer of earth; ſtill drawing in the ſides of the bed, ſo as to form it like the ridge of an houſe, which may be done by three layers of dung and as many of earth. When the bed is finiſhed it ſhould be covered with litter, to keep out the wet and prevent its drying; in this ſituation it may remain eight or ten days, by which time it will be of a proper degree of warmth; the litter ſhould then be taken off, the ſides of the bed ſmothered, and a covering of light rich earth ſhould be laid over the bed: upon this the ſmall roots or off-ſets of the muſhrooms ſhould be put, placing them two or three inches aſunder; then gently cover them about half an inch thick with the ſame light earth; and again put on the covering of litter. The great ſkill in managing theſe beds is that of keeping them in a proper temperature of moiſture. By this means muſhrooms may be produced all the year; and when the beds are deſtroyed, the ſurface which contains the duſt and roots of the muſhrooms ſhould be laid by in a dry place for a freſh ſupply, till the proper time of uſing it. *Miller's Gard. Dict.*

MUSIC, one of the ſeven ſciences, commonly called liberal, and comprehended alſo among the mathematical, as having for its object diſcreet quantity or number, but not conſidering it in the abſtract like arithmetic, but in relation to time and ſound, in order to make a delightful harmony: or, it is the art of diſpoſing and conducting ſounds conſidered as acute and grave; and proportioning them among themſelves, and ſeparating them by juſt intervals pleaſing to the ſenſe. Mr. Malcolm defines it a ſcience that teaches how ſound, under certain meaſures of time and tune, may be produced; and ſo ordered and diſpoſed, as either in conſonance or ſucceſſion, or both, they may raiſe agreeable ſenſations.

MUSK, *Moſchus*, in the materia medicu, an odoriferous grumous ſubſtance, found in a little bag, ſituated near the umbilical region of an oriental quadrupede, which is ſaid by ſome to bear the greateſt reſemblance to the goat, by others to the ſtag kind. The beſt muſk is brought from Tonquin in China, an inferior ſort from Agria and Bengal, and a ſtill worſe ſort from Ruſſia. Fine muſk comes over in round thin bladders, generally about the ſize of pigeons eggs, covered with ſhort brown hairs well filled, and without any aperture, or any appearance of their having been opened. The muſk itſelf is dry, with a kind of unctuoſity; of a dark reddiſh brown, or ruſty blackiſh colour; in ſmall round grains, with very few hard black clots; perfectly free from any ſandy or other viſible foreign matter. Chewed, and rubbed with a knife on paper, it looks bright, yellowiſh, ſmooth, and free from grittineſs. Laid on a red-hot iron, it catches flame, and burns almoſt entirely away, leaving only an exceeding ſmall quantity of light greyiſh aſhes: if any earthy ſubſtances have mixed with the muſk, the quantity of the reſiduum will diſcover them. This concrete has a bitteriſh ſubacrid taſte; and a fragrant ſmell, agreeble at a diſtance, but ſo ſtrong as to be diſagreeable when ſmelt too near, unleſs weakened by a large admixture of other ſubſtances. It is not only ſaid to vary in goodneſs according to the ſeaſon of its being taken from the animal, but which is oftentimes ſo artfully ſophiſticated, that the abuſes cannot be diſcovered by any external characters, or by any other known means than the degree of its ſpecific ſmell and taſte.

MUSK, a medicine of great eſteem in the eaſtern countries, has lately come into uſe amongſt us, alſo, in ſome nervous diſorders; though liable, by its ſtrong impreſſion on the organs of ſmell, to offend and diſorder hyſterical perſons and conſtitutions of great ſenſibility, yet when taken internally, it is found to abate ſymptoms of that kind, which its ſmell produces, and to be one of the principal medicines of the antiſpaſmodic claſs. Dr. Wall informs us, that two perſons labouring under a ſubſultus tendinum, extreme anxiety, and want of ſleep, occaſioned by the bite of a mad dog, were perfectly relieved by two doſes of muſk of 16 grains each: that convulſive hiccoughs, attended with the worſt ſymptoms, were removed by a doſe or two of ten grains; that in ſome caſes, where this medicine could not, on account of ſtrong convulſions, be adminiſtered by the mouth, it proved of ſervice when injected as a clyſter: that he never met with any perſon, how averſe ſoever to perfumes, but could take it in the form of a bolus without inconvenience: that under the quantity of ſix grains, he never found much effect from it, but that when given to ten grains and upwards, it produces a mild diaphoreſis, without heating or giving any uneaſineſs, but on the contray, abating pain and raiſing the ſpirits; and that after the ſweat has begun, a refreſhing ſleep generally ſucceeds. This medicine has been tried alſo in ſome maniacal caſes, in which it ſeemed to procure a temporary relief.

MUSKET, a fire-arm borne on the ſhoulder, and uſed in war. The length of a muſket is fixed at three feet eight inches from the muzzle to the pan, and it carries a ball of ſixteen to the pound. In fortification, the length of the line of defence is limited by the ordinary diſtance of a muſket-ſhot, which is about 120 fathoms; and the length of almoſt all military architecture is regulated by this rule.

MUSKETOON, a kind of ſhort thick muſket, whoſe bore is the thirty-eighth part of its length: it carries five ounces of iron, or ſeven and a half of lead, with an equal quantity of powder. This is the ſhorteſt ſort of blunderbuſſes.

MUSLIN, a fine thin ſort of cotton cloth, which bears a downy nap on its ſurface. There are ſeveral ſorts of muſlins brought from the Eaſt Indies, and more particularly from Bengal; ſuch as doreas, betelles, mulmuls, tanjeebs, &c.

* MUSSLEBURGH, battle at. This battle was fought on the 10th day of September 1547, between the Engliſh and Scots. Henry VIII. had agreed with the Scots, that his ſon (now Edward VI. king of England) ſhould marry their young queen. The proſpect of this match, by which the Engliſh would become maſters of Scotland, was extremely diſagreeable to France. Theſe two kingdoms had ever been allied to each other, and the former had always been of great uſe to the latter in her wars with England. To prevent, therefore, the loſs of ſuch a convenient ally, the French emiſſary in Scotland eſtabliſhed a powerful oppoſition to the intended alliance with England, and ſucceeded ſo far, that the duke of Somerſet, whom Henry had

appointed protector during the minority of his ſon, thought himſelf obliged by force of arms to compel the Scots to execute the contract. Accordingly he entered the Scottiſh territories, at the head of fifteen thouſand foot, and three thouſand horſe On the other hand, the Scots, to the number of thirty thouſand, with thirty pieces of cannon, were ready to receive the invaders. Before the protector would engage the enemy, he ſent a letter to the earl of Arran, the Scottiſh regent, aſſuring him, his intention was not to hurt the realm of Scotland, but rather to defend it, by promoting an union of the two kingdoms, on fair and honourable terms, by virtue of the marriage, to which the Scottiſh parliament had agreed in the moſt ſolemn manner. He pointed out the advantages that would accrue to Scotland from ſuch a match. He propoſed, that if all the nobility of the kingdom were not inclined to a peace on ſuch terms, hoſtilities ſhould ceaſe until the queen ſhould be of age to chooſe for herſelf. The regent communicated theſe honourable propoſals to his brother John, archbiſhop of St. Andrews, and a few other individuals, who being elated with the hope of victory, adviſed him to conceal them from the reſt of the nobility, and in the mean time diffuſed a report through the whole army, that the Engliſh were come to carry off the queen, and inſlave the country. The ſoldiers believed this inſinuation, and took to their arms in a tumultuous manner. Underſtanding that the Engliſh were in motion, they paſſed the river Eſk, and took poſſeſſion of a riſing ground, while the protector wheeled about and encamped upon the hill of Pinkencleuch, near the ſide of the Frith, where their fleet lay at anchor. The enemy imagining he intended to reimbark, quitted their advantageous ground in order to attack; and this precipitate ſtep was the cauſe of their deſtruction. The Engliſh began to be in want of proviſion, and had the Scots maintained their poſt, the protector could not have retreated without expoſing his army to the moſt imminent danger. But the impetuoſity of the enemy ſaved them the riſk of any ſuch diſaſter, On the 10th day of September they divided their forces into three bodies. The firſt, under the command of the earl of Angus, was flanked on the right with four or five pieces of artillery, and on the left with four hundred horſemen. The ſecond line was commanded by the regent. The third by the earl of Argyle, who had brought into the field four hundred highlanders; and theſe were diſpoſed on the left flanks of the ſecond and third bodies. The protector ſeeing them abandon their poſts, congratulated himſelf on the event, and cauſed his army to be drawn up in order of battle. The van was commanded by the earl of Warwick, and took poſt on the ſide of the hill, where the great artillery was poſted. The main body, under the general, was drawn up partly on the hill, and partly on the plain, and the rear was extended on the plain at ſome diſtance from the van and center. The lord Grey, who commanded the men at arms, was poſted at the left wing, ſo as to flank the Scots, but forbidden to charge until the front of both armies ſhould be engaged. The enemy advancing along ſhore, were galled from an Engliſh galley, the ſhot of which killed the lord Graham, and threw the highlanders into confuſion. The lord Gray perceiving their diſorder, advanced immediately to charge the enemy's van in flank, but met with ſuch a warm reception from their ſpearmen, that he himſelf was dangerouſly wounded, and as the action happened in broken ground, his men at arms were actually routed, and the ſtandard in great danger of being loſt. Had the Scots been furniſhed with horſe to purſue this advantage, in all probability the Engliſh would have been entirely defeated, though the wind and ſun were full in the faces of the enemy; but as they were deſtitute of cavalry, the lord Gray had time to rally his horſe behind his infantry. The earl of Warwick detached Sir Peter Mewcas and Peter Gamboa, a Spaniſh officer, with all the muſketry, to attack the Scots, whoſe highland archers were not yet come up. The Engliſh muſketry advancing to a ſlough, where the horſe had been diſcomfitted, fired in the faces of the enemy. Theſe were ſuſtained by the archers, who ſhot their arrows over the heads of the muſketeers, and at the ſame time the artillery planted on the hill on the left, and the ordnance of the galley anchored cloſe to the ſhore on the left, made ſuch havock amongſt them, that they fell in heaps, without having it in their power to annoy their enemies. In this diſtreſs their van fell back a little, in hope of of drawing the Engliſh over the ſlough and broken ground, that they might have an opportunity of acting hand to hand:

but the highlanders in the ſecond line imagining their front was defeated, betook themſelves to flight in a body, and this circumſtance overwhelmed their whole army with conſternation. Diſorder and rout immediately enſued. The Scots threw down their arms, and fled in the utmoſt confuſion. Then the Engliſh cavalry being rallied, fell in upon the fugitives, and meeting with no reſiſtance, made ſuch a terrible carnage, that they lay like ſheep in a field of paſture. The whole ſurface of the ground was ſtrewed with ſpears and ſwords. The river Eſk and ſeveral petty brooks were ſwelled with the blood of the ſlain, which amounted to fourteen thouſand, inſomuch that when the ſlaughter was over, the very ſoldiers were aſtoniſhed at their own cruelty, for the Engliſh did not loſe above fifty horſemen, and their infantry did not ſtrike a ſtroke. About three thouſand eccleſiaſtics, who had made a ſeparate body for themſelves, were maſſacred without mercy. One thouſand five hundred of the vanquiſhed were taken priſoners, and among theſe the earl of Huntley, the lords Yeſter, Hamilton, and Wemyſs, together with the maſter of Sempil.

MUSTER, in the marine, a ſummoning together the crew of any particular ſhip, and calling them ſeveraly over by their names.

MUTE, *dumb*, in a general ſenſe, ſignifies a perſon that cannot ſpeak, or has not the uſe of ſpeech.

MUTE, in law, a perſon that ſtands dumb or ſpeechleſs, when he ought to anſwer, or to plead.

MUTE, in grammar, a letter which yields no ſound without the addition of a vowel. The ſimple conſonants are ordinarily diſtinguiſhed into mutes and liquids, or ſemi-vowels.

The mutes in the Greek alphabet are nine, three of which, viz. ϖ, κ, τ, are termed tenues; three, β, γ, δ, termed mediæ; and three, φ, χ, θ, termed aſpirates.

The mutes of the Latin alphabet are alſo nine, viz. B, C, D, G, I, K, P, Q, T.

MUTILATION, the retrenching or cutting away any member of the body. This word is alſo extended to ſtatues and buildings, where any part is wanting, or the projecture of any member, as a corniche or an impoſt, is broken off.

MUZZLE *of a Gun or Mortar*, the extremity at which the powder and ball is put in; and hence, the muzzle-ring is the metalline circle, or moulding, that ſurrounds the mouth of the piece.

MYOLOGY, *Myologia*, a treatiſe or deſcription of the muſcles.

MYOPS, implies a ſhort-ſighted, or purblind perſon, who cannot ſee objects at a diſtance but confuſedly, and near ones diſtinctly, which is contradiſtinguiſhed from preſbyta. This diſorder is owing to the too great convexity of the ball of the eye, and particularly of the cryſtaline humour; whereby the viſual rays concur before they reach the retina. For this reaſon, to ſee an object diſtinctly, they muſt either apply it cloſe to the eye, or uſe a concave glaſs.

MYOSOTIS, mouſe-ear, in botany, a genus of plants.

MYOSURUS, mouſe-tail, in botany.

MYRIAD, a term ſometimes uſed to denote ten thouſand.

MYRIOPHYLLUM, ſmall water-milfoil, in botany.

MYRISTICA, the nutmeg-tree, a genus of trees, the characters of which are not fully aſcertained.

MYROBALANS, dried medicinal fruits, of the plum kind, brought from the Eaſt-Indies. Five ſorts have been diſtinguiſhed in the ſhops; but all of them have an unpleaſant, bitteriſh, very auſtere taſte; and ſtrike an inky blackneſs with ſolution of chalybeate vitriol. They are ſaid to have a gently purgative, as well as aſtringent and corroborating virtue; but in this country they have long been entire ſtrangers to practice, and are now diſcarded by the colleges both of London and of Edinburgh, from their catalogue of officinals.

MYRRH, in the materia medica, a gummy reſinous concrete juice, of an oriental tree, of which we have no certain account. It comes over in glebes or drops, of various colours and magnitudes; the beſt ſort is ſomewhat tranſparent, friable, in ſome degree unctuous to the touch, of an uniform browniſh or reddiſh yellow colour, often ſtreaked internally with whitiſh ſemi-circular veins; of a moderately ſtrong, not diſagreeable ſmell; and a lightly pungent, very bitter taſte, accompanied with an aromatic flavour, but not ſufficient to prevent its being nauſeous to the palate.

This bitter aromatic gummy-reſin is a warm corroborant, deobſtruent, and antiſeptic. It is given from a few grains to a ſcruple and upwards, in uterine obſtructions, cachexies, putrid fevers, &c.

and often employed alſo as an external antiſeptic and traumatic.

Tinctures of mirth, made by digeſting three ounces of the concrete in a quart of rectified or proof ſpirit, are kept in the ſhops, and given ſometimes internally from fifteen drops to a tea-ſpoonful, but oftener uſed among us externally for cleanſing ulcers and promoting the exfoliation of carious bones; both tinctures are of a reddiſh yellow colour.

MYRTIFORM, in anatomy, an appellation given to ſeveral parts, from their reſembling myrtle-berries.

MYRTLE, in botany, an ever-green ſhrub, with oblong leaves, pointed at both ends. It is a native of the ſouthern parts of Europe, from whence the ſhops have been uſually ſupplied with the berries, called myrtilli, which rarely come to perfection in our climate; nor does the ſhrub bear our ſevere winters without ſhelter. The berries of the myrtle, recommended in alvine and uterine fluxes and other diſorders from relaxation and debility, appear to be among the mild reſtringents or corrobotants: they have a roughiſh not unpleaſant taſte, accompanied with a degree of ſweetneſs and aromatic flavour. The leaves have likewiſe a manifeſt aſtringency, and yield, when rubbed, a pretty ſtrong aromatic ſmell, agreeable to moſt people. There are ſeveral ſpecies of this plant, however, preſerved in our gardens; they are all eaſily propagated from cuttings. The beſt ſeaſon for this is July, and the ſtraighteſt and youngeſt vigorous ſhots are to be choſen.

MYSTERY, ſomething ſecret or concealed, impoſſible or difficult to comprehend. All religions, true or falſe, have their myſteries. The pagan religion was remarkably full of them. Ovid reckons it a great crime to divulge the myſtic rites Ceres and Juno. The eleuſinia, or ſacred rites of Ceres, ſolemnized at Eleuſis, were called, by way of eminence, the Myſteries; and ſo ſuperſtitiouſly careful were they to conceal theſe ſacred rites, that if any perſon divulged any part of them, he was thought to have called down ſome divine judgment on his head, and it was accounted unſafe to abide under the ſame roof with him; and Horace declares, that he would not put to ſea in the ſame ſhip with one who revealed the myſteries of Ceres. The pagan myſteries, it is true, were generally myſteries of iniquity, and concealed only becauſe their being publiſhed would have rendered their religion ridiculous and odious. Thus the ſacred writings often ſpeak of the infamous myſteries of the pagan deities, in which the moſt ſhameful crimes were committed under the ſpecious veil of religion.

The whole religion of the Egyptians was myſterious from the beginning to the end, and both their doctrine and worſhip wrapped up in ſymbols and hieroglyphics.

The religion of the Jews is ſuppoſed to be full of myſteries. The whole nation, according to St. Auguſtin, was a myſtery, as it repreſented or was a type of the people of Chriſt, and the Chriſtian religion. Whatever was commanded or forbidden them was figurative, and their ſacrifices, prieſthood &c. included myſteries. The prophecies concerning Jeſus Chriſt in the Jewiſh books, are likewiſe figurative and myſterious.

The Chriſtian religion has alſo its myſteries; but in the Scripture language the word myſtery is uſed with ſome latitude, and denotes whatever is not to be known without a divine revelation, and all the ſecret things which God has diſcovered by his miniſters the prophets, by Jeſus Chriſt and his apoſtles. The myſteries of the Chriſtian church are, the incarnation of the word, the hypoſtatical union of the divine and human nature, the miraculous birth, death, and reſurrection of the ſon of God, the doctrine of the trinity, &c

St. Paul often ſpeaks of the myſteries of the Chriſtian religion; as the myſtery of the goſpel, the myſtery of the croſs of Chriſt, the myſtery which was kept ſecret ſince the world began; and he calls the preachers of the goſpel, the ſtewards of the myſteries of God.

MYSTICAL, ſomething myſterious or allegorical.

MYSTICS, a religious ſect, diſtinguiſhed by their profeſſing a pure, ſublime, and perfect devotion, with an entire diſintereſted love of God, free from all ſelfiſh conſiderations, and by their aſpiring to a ſtate of paſſive contemplation.

MYTHOLOGY, μυθολογια, the hiſtory of the fabulous gods and heroes of antiquity, with the explanations of the myſteries or allegories couched therein. Lord Bacon thinks that a great deal of concealed inſtruction and allegory was originally intended in moſt part of the ancient mythology.

N.

N, A liquid conſonant, and the thirteenth letter of the Greek, Latin, Engliſh, &c. alphabets.

It is formed from the old Greek, and that from the old Hebrew nun. It ſuffers no conſonant immediately after it in the beginning of words or ſyllables; nor any before it but *g*, *k*, and *ſ*, as *gnaw*, *know*, *ſnow*, &c.

As a numeral, N ſtands for 900; and with a daſh over it, thus $\bar{N}$, for 9000.

NABOB, a viceroy, or governor of one of the provinces of the mogul's empire, in India.

NABONASSAR, or *Æra of* NABONASSAR, a method of computing time from the commencement of Nabonaſſar's reign.

The epocha of Nabonaſſar is of the greater importance, as Ptolemy and other aſtronomers account their years from it.

NADAB, the ſovereign pontiff, or high prieſt of the Perſians, whoſe dignity is the ſame as that of the mufti among the Turks; with this difference only, that the nadab may diveſt himſelf of his eccleſiaſtical office, and paſs to civil employments, which the mufti cannot.

NADIR, in aſtronomy, that point of the heavens which is diametrically oppoſite to the zenith, or point directly over our heads.

The zenith and nadir are the two poles of the horizon.

* NÆNIA, in pagan worſhip, a goddeſs ſuppoſed to preſide over the melancholy performances ſung at funerals, in honour of the dead, to flutes and other inſtruments, by women who are hired for that purpoſe. Theſe funeral ſongs, ſays Horace, were firſt invented by Simonides, a Greek lyric poet, and called Næniæ, from the name of the goddeſs who preſided over them. The flutes at the funerals of both Greeks and Romans, were not only uſed to accompany the voice of thoſe who ſung the Næniæ, but to point out the exact time when the aſſiſtants were to ſtrike their breaſts, in token of their ſorrow, which was to be performed in cadence with the muſic.

NAHUM, or *the Prophecy of* NAHUM, a canonical book of the Old Teſtament. Nahum, the ſeventh of the twelve leſſer prophets, was a native of Elkoſhai, a ſmall village of Galilee. The ſubject of his prophecy is the deſtruction of Nineveh, which he deſcribes in the moſt lively and pathetic manner. His ſtyle is bold and figurative. This prophecy was verified at the ſiege of that city by Aſtyages, in the year of the world 3378, 662 years before Chriſt. The time of Nahum's death is unknown; the Greek menologies, and the Latin martyrologies, place his feſtival on the firſt of December.

NAIADS, in mythology, the nymphs of the fountains.

NAIANT, in heraldry, a term uſed in blazoning fiſhes, when in an horizontal poſture, as if ſwimming.

NAIL, *Unguis*, in the animal body, a kind of horny ſubſtance growing over the ends of the fingers and toes of men, women, &c. much of the ſame nature with horn or the hoofs of beaſts. The nails are looked upon by ſome as productions of the cutaneous papillæ, and by others as a continuation of the epidermis. There are three parts generally diſtinguiſhed in the nails, namely, the root, body, and extremity. The root is white, and like a creſcent, and the greateſt part of it hid under the ſemi-lunar fold. The body of the nail is naturally arched, tranſparent, and of the colour of the cutaneous papillæ that lie under it. The extremity of the nail does not adhere to any thing, and grows as often as it is cut. The principal uſe of the nails is to ſtrengthen the ends of the fingers and toes, and to hinder them from being inverted towards the convex ſide of the hand or foot, when we handle or preſs upon any thing hard; ſo that they ſerve rather for buttreſſes than ſhields. *Winſlow.*——The Chineſe doctors pique themſelves on the exceſſive length of their nails; ſome of them, according to Le Compte, being near as long as their fingers.

NAIL, a meaſure of length, containing the ſixteenth part of a yard.

NAILS, in building, &c. ſmall ſpikes of iron, braſs, &c. which being driven into wood, ſerve to bind ſeveral pieces together, or to faſten ſomething upon them. The ſeveral ſorts of nails are very numerous; as 1. Back and bottom nails; which are made with flat ſhanks to hold faſt, and not open the wood. 2 Clamp-nails for faſtening the clamps in building, &c. 3. Claſp-nails, whoſe heads claſping and ſticking into the wood, render the work ſmooth, ſo as to admit a plane over it. 4. Clench-nails, uſed by boat and barge builders, and proper for any boarded buildings that are to be taken down; becauſe they will drive without ſplitting the wood, and draw without breaking; of theſe there are many ſorts. 5. Clout-nails, for nailing on clouts to axle trees. 6. Deck-nails, for faſtening of decks in ſhips, doubling of ſhipping, and floors laid with planks. 7. Dog-nails, for faſtening of hinges on doors, &c. 8. Flat-points, much uſed in ſhipping, and are proper where there is occaſion to draw and hold faſt, and no conveniency of clenching. 9. Jobent nails, for nailing thin plates of iron to wood, as ſmall hinges on cup-board-doors, &c. 10. Lead-nails, for nailing lead, leather, and canvas to hard wood. 11. Port-nails, for nailing hinges to the ports of ſhips. 12. Pound-nails, which are four-ſquare, and are much uſed in Eſſex, Norfolk, and Suffolk, and ſcarce any where elſe, except for paleing. 13. Ribbing-nails, principally uſed in ſhip-building, for faſtening the ribs of ſhips in their places. 14. Roſe-nails, which are drawn four-ſquare in the ſhank, and commonly in a round tool, as all common two-penny nails are; in ſome countries all the larger ſort of nails are made of this ſhape. 15. Rother-nails, which have a full head, and are chiefly uſed in faſtening rother-irons to ſhips 16. Round-head nails, for faſtening on hinges, or for any other uſe where a neat head is required; theſe are of ſeveral ſorts. 17. Scupper-nails, which have a broad head, and are uſed for faſtening leather and canvas to wood. 18. Sharp-nails; theſe have ſharp points and flat ſhanks, and are much uſed, eſpecially in the Weſt-Indies, for nailing ſoft wood. 19 Sheathing nails, for faſtening ſheathing-boards to ſhips. 20. Square-nails, which are uſed for hard wood, and nailing up wall-fruit. 21. Tacks, the ſmalleſt of which ſerve to faſten paper to wood; the middling for wool-cards, &c. and the larger for upholſterers and pumps. Nails are ſaid to be toughened when too brittle, by heating them in a fire-ſhovel, and putting ſome tallow or greaſe among them. Nails are ſold at ſix ſcore to the hundred: in lathing, 500 are uſually allowed to a bundle of five feet laths, and 600 to a bundle of four feet laths: in flooring, 200 are ſufficient for a ſquare of flooring.

NAISSANT, in heraldry, is applied to any animal iſſuing out of the midſt of ſome ordinary, and ſhewing only his head, ſhoulders, fore-feet and legs, with the tip of his tail; the reſt of his body being hid in the ſhield, or ſome charge upon it; in which it differs from iſſuant, which denotes a living creature ariſing out of the bottom of any ordinary or charge.

NAME, *Nomen*, a word whereby men have agreed to expreſs ſome idea; or which ſerves to ſignify a thing or ſubject ſpoken of. Names are either proper or appellative. Proper names are thoſe which repreſent ſome individual thing or perſon, in order to diſtinguiſh it from all other things of the ſame ſpecies. Proper names are either called Chriſtian, as that given us at baptiſm, or ſurnames; the firſt impoſed for the diſtinction of perſons, anſwering to the Roman prænomen; the ſecond for the diſtinction of families, anſwering to the nomen of the Romans, and the patronymicum of the Greeks. Appellative, or general names, are thoſe which ſignify common ideas, or which are common to ſeveral individuals of the ſame ſpecies, as a horſe, animal, fiſh, &c.

* NAMUR, a large city of the Netherlands, and capital of the county of Namur, ſeated at the confluence of the rivers Maeſe and Sambre, between two mountains, and defended by a ſtrong caſtle, ſeated on a craggy rock. The caſtle, and its fortifications, occupy as much ſpace as the city itſelf. In 1692, the French beſieged and took it, in ſix days, after the trenches were opened; but it was retaken by king William in 1695, in ſight of an army of one hundred thouſand French, though there were ſixty thouſand men in garriſon. At length it was ceded to the houſe of Auſtria, by the treaty of Utrecht, in 1713. It was taken by the French in 1746, but was given up after the treaty of Aix la Chapelle. The cathedral church is an old building, with a chapter, conſiſting of twenty canons, and is a biſhop's ſee. There are here ſix convents for men, and ſeven for women. It is 12 miles ſouth-weſt of Hui, 32 ſouth-eaſt of Bruſſels, and 150 north-eaſt of Paris. Long. 4. 51. E. Lat. 50, 22. N.

* NAMUR, (ſiege of.) This town having proved itſelf ſo remarkably ſtrong by the two foregoing ſieges, that it was never attempted by the duke of Marlborough. But the French general, marechal count de Saxe, in 1746, determined to outdo the duke of Marlborough, by laying ſiege to this important place. The duke of Cumberland being in England, prince Charles of Lorrain aſſumed the command of the confederate army, July 4, at Terheyde: the Heſſian troops from Scotland, and a reinforcement of Auſtrians, under count Palfy, had now augmented this army to eighty-ſeven thouſand men. The confederate generals gueſſed at the marechal Saxe's deſign, and therefore marched into the neighbourhood of Namur, to cover that place from any attacks which the marechal might make. On the 18th of July, they were in ſight of the French army, which exceeded one hundred thouſand men, encamped at Gemblours, ten miles north-weſt from Namur. The marechal did not chuſe to attack the confederates till he had gained poſſeſſion of Namur, he firſt ſeized Dinant, by which he made himſelf maſter of the Maeſe above Namur: then Huy, which, on account of its convenient ſituation, was of great advantage to him. The loſs to the allies on this occaſion was conſiderable, their grand magazine was taken in Huy, and their communication cut off with Maeſtricht. One would think the allies were in a lethargic infatuation, to ſuffer themſelves to be ſurprized in this manner, and what is ſtill more inexcuſable, they ſuffered marechal Saxe, by his poſition, to deprive them of all kinds of ſubſiſtence which obliged prince Charles of Lorrain to quit his advantageous poſt, and abandon Namur to its own ſtrength. Namur was inveſted immediately by thirty five thouſand men, under the command of count de Clermont. The garriſon conſiſted of 7000 Auſtrians, who made a vigorous defence; but a continual ſhower of bombs made ſuch dreadful havock in the city, that in a few days it was converted into a heap of rubbiſh. However, the garriſon held out till the 23d of September, after a ſiege of twenty-one days. The French are ſaid to have gained this acquiſition at the expence of 4000 men's lives: the French king ordered Te Deum to be ſung throughout all his kingdom, for the rapid conqueſt of Namur; his miniſters affirmed that their troops were no longer ſenſible of the lengths to which ſieges were carried in former reigns, and that the ſurrender of Namur was the fruit of a campaign, where valour, capacity, and prudence, conquered the enemy, without fighting them. During the ſiege of Namur, the allied army encamped at Maeſtricht, where they were joined by Sir John Ligonier with ſome Britiſh and Bavarian battalions; upon which the prince reſolved to give the enemy battle: with this view he paſſed the Maeſe, on the 13th day of September, and advanced towards marechal Saxe, whom he found ſo advantageouſly poſted at Tongres, that he thought proper to march back again.

* NANKIN, a city of China, the capital of the province of Nanking, is about ſixteen miles in circumference, and three miles from a great river, from which there are ſeveral canals which enter the town. The plan of Nankin is irregular; this ariſes from the nature of the ground, which is very uneven and hilly. It was formerly the Imperial city, and had a magnificent palace and obſervatory, now quite demoliſhed. There were ſuperb temples, ſtately monuments, and public buildings, which are alſo gone to decay; moſt of them having been deſtroyed by the Tartars. About a third part of this city is quite deſolate; the ſtreets are narrow, but handſome, well paved, and bordered with neat ſhops, richly furniſhed. Here are now very few public buildings worth mentioning, except the gates, a few idol temples, and the celebrated tower of China-ware, which is 200 feet high, and conſiſts of nine ſtories. This city had formerly a very fine harbour; but at preſent the mouth is almoſt ſtopped up. It is above 600 miles from Peking. Longitude 118. 35. E. Latitude 32. 7. N.

* NANTES, an ancient, rich city of France, in Britanny, with a biſhop's ſee, an univerſity, and a mint. It is one of the moſt conſiderable places in the kingdom, and contains the richeſt merchants; it was formerly the reſidence of the dukes of Brittany, where they built a very ſtrong caſtle on the ſide of the river, and it is well fortified. There are here ſeveral pariſhes and religious houſes, and the cathedral contains the tombs of the ancient dukes. There are here ſeveral fine bridges over the river Loire, which is navigable. The ſuburbs are ſo large, that they exceed the city. The Spaniards trade here with wine, fine wool, iron, ſilk, oil, oranges, and lemons, and carry back cloth, ſtuffs, corn, and hard-ware.

The Dutch ſend ſalt-fiſh, and all ſorts of ſpices; and in return have wine and brandy. The Swedes bring copper, and the Engliſh lead, tin, and pit-coal. It was here that Henry IV. promulgated the famous edict of Nantes, in 1598, and which was revoked in 1685. It is 37 miles ſouth-weſt of Angiers, and 217 ſouth-weſt of Paris. Long. 1. 31. W. Lat. 47. 13. N.

NAPE, a name uſed for the hind part of the neck.

NAPHTHA, in natural hiſtory, a fluid mineral body, of a thin conſiſtence, bright and pellucid, of a ſtrong ſmell, very readily inflammable, and when pure, burning away, without leaving any reſiduum. The naptha is found in conſiderable quantities floating on the water of certain ſprings, principally breaking out at the ſides of hills in Perſia, Tartary, and ſome parts of the empire of China, where if a lighted candle be held near the ſurface, it takes fire and overſpreads the ſurface of the water for a great extent, with a ſtrong white flame, and emits a very diſagreeable ſmell. The genuine naptha is very rare in Europe; it is not known to be any where naturally produced here, and what we ſee of it is generally ſophiſticated.

The medicinal virtues of the naphtha are the ſame with the common petroleum, but in a more remiſs degree. It is uſed externally on many occaſions in Perſia; and is taken inwardly, a few drops for a doſe, in colics. The principal uſe made of it, however, is burning in lamps; for which purpoſe it is very proper.

* NAPLES, (kingdom of,) a country formerly known by the name of Great Greece, and takes up the ſouth part of Italy, and repreſents in ſhape the lower part of a boot. It is a peninſula, having the gulph of Venice to the north, the ſea of Greece to the eaſt, and the ſea of Naples to the weſt. It is one of the fineſt parts of Italy; and has undergone many changes: the Normans became maſters of it in the eleventh century; and the ſovereigns were called counts, then dukes, and afterwards kings of Puglia: but in 1282, Peter III. king of Arragon, cauſed all the Normans to be maſſacred; and this maſſacre was called the Sicilian veſpers. After this Puglia was joined to Sicily, whence the ſovereigns have had the title of king of the two Sicilies, for near three hundred years paſt. It has been called the kingdom of Naples, from the city of that name, which is the capital. The French entered it again in the year 1504, but were driven away, and then it came under the dominion of Spain; but the archduke Charles, afterwards the emperor Charles VI. got poſſeſſion of it in 1706. In 1736 it was given to Don Carlos, by the treaty of Vienna, who was lately in poſſeſſion of it, but is now king of Spain, and was ſucceeded by his ſecond ſon. This kingdom is a fief of the church, and the king pays the pope a purſe of ſeventy thouſand crowns of gold, and a white palfrey, annually. It is about two hundred and fifty miles in length, and ſeventy in breadth. The Apenine mountains croſs the whole country from eaſt to weſt, and divide it into two parts. The ſoil contains a conſiderable mixture of ſulphur, of which there are many mines, and ſeveral vulcanos. The heat of the country is greatly owing to this; and for this reaſon the fruits become perfectly ripe. Theſe are oranges, lemons, citrons, pomgranates, almonds, dates, capers, bay-berries, and figs. They have alſo ſugar, aniſeed, pepper, and manna. The wine produced here is excellent; the beſt of which is called lachyrymæ Chriſti. This country is not leſs rich in flax, hemp, cotton, ollive oil, honey, wax, iron, and alum; likewiſe deer, fiſh, and fowl, are very common. As this kingdom has been peopled by different nations, the Neopolitans have not only the vices of the original natives, but thoſe of ſeveral other foreign nations. Thoſe who live in the country are fond of hunting; but thoſe in the cities paſs their time in going to ſhews and ſpectacles. the ladies are greatly addicted to galantry; and though their huſbands are jealous, they find means to deceive them. The common people are much inclined to knavery and theft. The Jews were baniſhed out of this kingdom till the reign of Charles V. but in 1740, the late king allowed them to enter it again for the ſake of trade; however, in 1743, and 1744, a terrible plague happening, the churchmen perſuaded the king, it was on account of the Jews, and they were again expelled the kingdom. Naples is divided into four large provinces, namely Terra di Lavoro, Abruzzo, Puglia, and Calabria, which are all ſubdivided into ſeveral diſtricts.

* NAPLES, a large city of Italy, and capital of a kingdom of the ſame name. Its ſituation is extremely agreeable; and if Italy may be called the garden of the

world, Naples may certainly be called the garden of Italy. This city is very popolous, containing about three hundred thouſand inhabitants. The circumference of the walls is not above ſeven miles; but the grandeur, beauty, and magnificence of the ſuburbs, is aſtoniſhing. The Mediteranean or Tuſcan ſea waſhes the walls of Naples on the ſouth. The other ſide of the city is beſet with mountains and fruitful hills, which defend it from the injuries of the weather, ſhelter it from the winds, and ſupply it with excellent water. Beſides it is defended by a high caſtle called St. Elmo, cut out of a rock on the top of a mountain to the weſt of the city. The new caſtle is one of the moſt conſiderable fortreſſes of the city, where there is always a good garriſon. Near the caſtle is a tower, wherein the maſters of families impriſon their diſobedient ſons. Near this is the haven, and a little farther the royal palace, which is one of the fineſt and moſt magnificent in all Italy. Near the dock where the gallies are built there is an arſenal, wherein all the neceſſaries for ſea armaments are kept. The third fortreſs of Naples is the Caſtel d'Ovo, or the caſtle of the Egg; it is built on a rock, ſurrounded by the ſea, and the way to it is over a bridge two hundred paces long. It is well furniſhed with cannon, and has a ſtrong garriſon. The harbour is large and well kept, and is ſecured with a well built mole, which advances into the ſea like a half moon. The houſes of this city are built of ſtone, lofty, uniform, and generally in the modern taſte; the roofs are flat, and ſurrounded with baluſtrades, on which the inhabitants divert themſelves on ſummer evenings. There is ſcarce a great family in the kingdom but has a palace in this city, there are many large handſome ſquares, with abundance of fountains of extraordinary ſize and beauty; among which are three of remarkable magnificence, which are ſupplied with water from a ſpring at the foot of mount Veſuvius. They have a great number of churches and convents, of excellent ſtructure, adorned with a vaſt variety of curious pictures. In general, there is ſaid to be one hundred and twenty convents of men, forty of women, and three hundred churches. The cathedral church dedicated to St. Januarius is a magnificent old ſtructure, remarkable for a little modern chapel, eſteemed one of the fineſt in Europe. The church of St. Mary della Annunciata is alſo a very beautiful ſtructure, and the hoſpital which belongs to it has an income of two hundred thouſand crowns a year, and maintains two thouſand infirm people, and eight hundred orphans. Naples is an archbiſhop's ſee, and has an univerſity. The commerce of Naples chiefly conſiſts in ſoap, ſnuff, wine, ſilk, ſilk-waiſtcoats, ſtockings, and corn. It is ſeated on the ſea ſide, one hundred and twenty miles ſouth-eaſt of Rome, two hundred and twenty-five ſouth-eaſt of Florence, and three hundred ſouth of Venice. Long. 14. 45. E. Lat. 41. 51. N.

NARCISSUS, the daffodil, in botany. The root of this plant is emetic, vulnerary, and detergent.

* NARCISSUS, in fabulous hiſtory, the ſon of the river Cephiſſus, and Liriope, daughter of Oceanus. He was a youth of great beauty. Tireſias foretold that he ſhould live till he ſaw himſelf. He deſpiſed all the nymphs of the country, and made Echo languiſh, till ſhe became a mere ſound, by refuſing to return her paſſion; but one day returning weary and fatigued from the chace, he ſtopped on the bank of a fountain, to quench his thirſt, when ſeeing his own form in the water, he became ſo enamoured with the ſhadowy image, that he languiſhed till he died: on which, the gods changed him into the flower which bears his name.

NARCOTICS, in medicine, opiates, or medicines which excite ſleep.

Though much miſchief and danger may be the natural effects of narcotics, ſo that they may be eſteemed not far removed from the nature of poiſons; phyſicians, however, have at all times experienced great benefit from hypnotic anodynes, eſpecially in violent pains and fluxes; for what greater benefit can we receive than to be delivered from intolerable pains? Beſides, ſuch is the nature of pain, that, if it be of any long continuance, it either weakens the powers of the mind and body to ſuch a degree, as to render a diſeaſe, otherwiſe favourable, eventually mortal, or elſe brings death of itſelf. In diſorders of the ſtomach and inteſtines, all things which induce a ſtupor, are very cautiouſly, if at all to be exhibited, becauſe no kind of medicines is ſo pernicious and injurious to the tone and motions of the nervous parts. To preſerve health and prevent diſeaſes, nothing is ſo effectual, as to retain the tone, ſtrength, and motion of what they call the primæ viæ, or firſt paſſages, becauſe that moſt ſalutary excretion which is performed by ſtool, and diſcharges the ſordes, which are the recrements remaining after digeſtion, or are collected from all parts of the body, depends chiefly thereon. Where this evacuation is wholly ſuppreſſed, or performed after a ſlow and remiſs manner, a deluge of viſcous humours is ſoon collected, and becomes the cauſe as well as the fomenter of diſeaſes. There is nothing which ſo effectually diminiſhes the periſtaltic motion of the inteſtines, and ſuppreſſes inteſtinal excretion, as ſedatives and anodynes. It is very dangerous to adminiſter opiates and anodynes where the ſtomach and inteſtines are inclining to an inflammation and ſphacelus, or where an extraordinary impurity of the humours diſpoſes them to a corruption.

NARDUS CELTICA, Celtic nard, in botany, a ſmall ſpecies of valerian, with uncut, oblong, obtuſe, ſomewhat oval leaves. It is a native of the Alps, from whence the ſhops have been generally ſupplied with the dried roots, conſiſting of a number of blackiſh fibres, with the lower parts of the ſtalks adhering; which laſt are covered with thin yellow ſcales, the remains of the withered leaves. This root has been recommended as a ſtomachic, carminative, and diuretic; at preſent it is ſcarcely otherwiſe made uſe of, in this country, than as an ingredient in mithridate and theriaca, though its ſenſible qualities promiſe ſome conſiderable medicinal powers.

NARDUS INDICA, Indian nard, or ſpikenard, in botany, the buſhy top of the root, or the remains of the withered ſtalks and ribs of the leaves of an Indian graſſy-leaved plant, of which we have no particular deſcription. The nard, as brought to us, is a congeries of ſmall tough reddiſh brown fibres, cohering cloſe together, but not interwoven, ſo as to form a bunch or ſpike about the ſize of a finger; ſometimes two or three bunches iſſue from one head, and ſometimes bits of leaves and ſtalks in ſubſtance are found among them.

The Indian nard, now kept in the ſhops chiefly as an ingredient in mithridate and theriaca, was formerly employed in the ſame intentions as the Celtic, and is ſaid to be uſed among the Orientals as a ſpice. It is moderately warm and pungent, accompanied with a flavour not diſagreeable.

NARRATION, in oratory and hiſtory, a recital or rehearſal of a fact as it happened, or when it is ſuppoſed to have happened.

NARRATION, in poetry, the action, or event, that makes the ſubject of an epic poem.

NARWAL, in icthyology, the unicorn fiſh, ſo called from a long-wreathed tooth; though it be really a tooth fixed in the gomphoſis of the upper-jaw, altogether in the manner of other teeth.

The narwal is a fiſh of the whale kind, often growing to twenty-five feet in length, but is more commonly found from ſixteen to twenty.

* NASEBY, (battle at.) In the year 1645, being the time of the grand rebellion; this battle was fought between Charles I. and his parliament. The king marched to Leiceſter, took that town by aſſault, and Fairfax followed the ſame route, in order to give him battle, the two houſes having, at the deſire of their general, diſpenſed with the attendance of Cromwell, who thus preſerved his command in their army, notwithſtanding the ſelf-denying ordinance. Charles, being informed that Fairfax was ordered to beſiege Oxford, advanced towards Harborough, where he received intelligence, that he had abandoned his deſign upon Oxford, and had been repulſed in aſſaulting the caſtle of Borſtal. The king continued his march, in expectation of being joined by colonel Gerard, with 2000 men, from Wales, as well as by lord Goring, at the head of 3000 cavalry. This officer had wrote to him from Taunton, giving him hopes of reducing that place, and adviſing him to act on the defenſive, till he ſhould join the army; but the letter fell into the hands of Fairfax, who thus apprized, reſolved to hazard an engagement before the junction could be effected. For this purpoſe he followed the royaliſts; and the king, ſeeing it would be impoſſible to reach Leiceſter, without expoſing his rear to certain deſtruction, determined to meet him half way. He accordingly marched back, and on the 14th day of June, came in ſight of the enemy, who were drawn up in order of battle, on a riſing ground, near Naſeby. Prince Rupert led the right of the royaliſts; the left was under the direction of Sir Marmaduke Langdale: lord Aſtley commanded the main body, conſiſting of all the infantry, and the king headed the body of reſerve. The cavalry on the enemy's right, was commanded by Cromwell; the left by

his ſon-in-law Ireton; while Fairfax and Skippon, conducted the centre. Prince Rupert attacked the left wing with his uſual impetuoſity and ſucceſs; they were purſued as far as the village; but the prince, in his return, miſpent his time in a fruitleſs attempt to ſeize their park of artillery. Cromwell in the mean time, was furiouſly engaged with Sir Marmaduke Langdale, whoſe horſe were broken, after a very obſtinate diſpute. The infantry on both ſides maintained the conflict with equal valour for ſome time, but in ſpite of Fairfax and Skippon, their battalions began to give way, when Cromwell returned, and charged the king's infantry in flank with ſuch vigour, as they could not reſiſt, ſo that they were immediately routed and diſperſed. By this time prince Rupert had rejoined the king; and the ſmall body of the reſerve; but his troops, though victorious, could not be brought to a ſecond charge. They were at all times licentious and ungovernable, but here they were intimidated; for Fairfax, Skipton, and Cromwell, had by this time reduced their forces into order of battle, and ſtood ready for either attack or defence. The king would have charged them at the head of his reſerve, even before Rupert returned, had he not been prevented by an uncommon incident. The Scottiſh earl of Carnwath, who rode by his majeſty's ſide, ſeizing the bridle of his horſe, turned him round, ſaying, with a loud oath, "Will you go upon your death in an inſtant." The troops ſeeing this motion, wheeled to the right, and rode off in ſuch confuſion, that they could not be rallied during the whole action. The king perceiving the fortune of the day irretrievably loſt, was obliged to abandon the victory to his enemies, who took all his cannon, baggage, and about five thouſand priſoners. Among other things which fell into their hands, was a caſket, containing his private letters to the queen, ſome of which were publiſhed. We cannot omit obſerving, that ſuch an air of tenderneſs runs through this correſpondence, between Charles and his conſort, as muſt impreſs every impartial reader with a very favourable idea of conjugal affection.

NATES, in anatomy, a term expreſſing thoſe two fleſhy exterior parts of the body, vulgarly called the buttocks.

NATES CEREBRI, two circular protuberances of the brain, ſituated on the back ſide of the medulla oblongata, near the cerebellum.

NATION, a collective term, uſed for a conſiderable people inhabiting a certain extent of land, confined within fixed limits, and under the ſame government.

NATIVE, a perſon conſidered as born in a certain place or country which was the proper reſidence of his parents, and where he received his education.

NATIVITY, or *Natal Day*, the day of a perſon's birth. The word nativity is chiefly uſed in ſpeaking of the ſaints, as the nativity of St. John the Baptiſt, &c. But when we ſay the Nativity, it is underſtood of that of Jeſus Chriſt, or the feaſt of Chriſtmas

NATIVITY, in aſtrology, the ſituation of the heavens, and particularly of the twelve houſes, at the moment of a perſon's birth.

NATRON, or *Mineral Fixed Alcaline Salt.* This ſalt is contained in great abundance in the waters of the ocean, and makes the baſis of the neutral ſalt ſo plentifully extracted from them for alimentory uſes. It is likewiſe diſcoverable in ſundry mineral ſprings, even of thoſe which do not participate of ſea-ſalt; and in ſome of the eaſtern countries it is ſaid to be found in conſiderable quantities on the ſurface of the earth, ſometimes pure, but more commonly blended with various hetrogeneous matters, from which it is extracted by means of water. The alkali, called ſoda, prepared by incenerating the maritime plant kali, or glaſs wort, contains a ſalt of the ſame kind.

NATURAL, in general, ſomething that relates to nature. Natural children are thoſe born out of lawful wedlock.

The natural functions are thoſe actions whereby the aliments are changed and aſſimilated ſo as to become a part of the body.

NATURAL HISTORY, a deſcription of the productions of the earth, air, water, &c. The natural hiſtory of any one place, is a very extenſive ſubject, which, according to Mr. Boyle, may be conveniently reduced to four heads; viz. the things that regard the heavens, the air, the waters, and the earth. Of the firſt claſs are the longitudes, and latitudes of places, the lengths or the longeſt and ſhorteſt days and nights; the climates, parallels, &c. what fixed ſtars are ſeen, and what are not ſeen there. About the air may be obſerved its temprature, as to the firſt four qualities, and the meaſure of them; its weight, clearneſs, and refractive power; its ſubtility or coarſneſs; its abounding with or wanting an eſurine ſalt; its variations according to the ſeaſons of the year, and the times of the day; what duration the ſeveral kinds of weather uſually have; what meteors it is moſt or leaſt apt to breed; and in what order they are generated, and how long they generally laſt; what winds it is moſt ſubject to; whether any of them are ſtated or ordinary; what diſeaſes are ſaid to be epidemical, or depending on the ſtate and condition of the air; what other diſeaſes it is ſubject to, wherein the air may be ſuppoſed to have ſome ſhare; what is the uſual ſalubrity of it, and what ſort of conſtitutions it agrees with, what it does not. See *Air*.

About the waters, it may be proper to obſerve the ſea, its depth, tides, currents, ſaltneſs, and other qualities: next the rivers will come unper conſideration, their depth, length, courſe, inundation, and the goodneſs or badneſs of their waters, with their gravity, and other peculiar qualities; after theſe the lakes, ſprings, ponds, &c. are to be conſidered, eſpecially the mineral waters, their kinds, qualities and virtues, and the manner of trying them; the inhabitants of the waters may follow here; and the particular kinds of fiſh that are found there, whether of the ſea or rivers, are to be mentioned, with an account of their ſtores, bigneſs, goodneſs, ſeaſons of perfection, haunts, peculiarities of any kind relating to them, and the manner of taking them, eſpecially when there is any thing ſingular in it.

The things relating to the earth, are laſt to be examined: theſe are, firſt the earth itſelf, then its inhabitants, and its various productions, whether external or internal. In the earth itſelf may be obſerved, its dimenſion, ſituation eaſt, weſt, north, and ſouth; its figure, its plains, and valleys, and their extent; its hills and mountains, and the height of the talleſt, both in reference to the neighbouring valleys and plains, and to the level of the ſea; as alſo whether the mountains lie ſcattered, or are diſpoſed in ridges; and, if of the latter kind, whether they run eaſt, weſt, north, or ſouth What promontories alſo, and what fiery or ſmoaking hills it has, if any: whether the country be coherent or much broken into iſlands: what the magnetical diclination is in ſeveral places, and the variation of that declination in the ſame place, and if thoſe be conſiderable; what may be conjectured as the occaſions of them, whether the vicinity of iron-mines, of ſubteranean fires, or what elſe. What the nature of the ſoil is, whether clayey, ſandy, or of good mould; and what vegitables, plants and trees beſt agree with it and ſucceed in it what worſt. By what particular contrivances the inhabitants improve the advantages, or remedy the diſadvantages of the ſoil; and what hidden qualities the ſoil may have. The inhabitants of the earth are then to be conſidered, both natives, and ſtrangers that have been long ſettled there; and in particular their ſtature, colour, features, ſtrength, agility or defects of theſe; and their complections, hair, beauty, and the like; their diet, inclinations and cuſtoms, ſo far as they are not owing to education; the fruitfulneſs and barrenneſs of the women; their hard or eaſy labours; the diſeaſes they are moſt ſubject to, and any remarkable ſymptoms attending them.

As to the external productions of the earth, the enquires are to be theſe: what graſſes, grains, and fruit it beſt produces: the herbs, flowers, and timber-trees; and the coppices, groves, foreſts, and woods the country has or wants: what peculiarities are obſerveable in any of them; what ſoils they moſt like or diſlike, and with what culture they thrive beſt. Then what animals the country has or wants, both as to wild beaſts and birds of prey, and as to poultry and cattle of all ſorts; and particularly if they have any animals that are not common, or any thing particular in thoſe they have. After thoſe, the ſubteranean ſtores are to be examined; what minerals the earth affords, and what it wants; then what quarries of ſtone, and in what manner they lie: what clays and earths are found there; as clays, marles, fuller's earths, earths for tobacco-pipes, earths for potter's wares, medicinal earths; what other mineral productions it yields, whether coals, ſalt-mines, or ſalt-ſprings, alum, vitriol, ſulphur, &c. What metals the country yields, with a deſcription of the mines of them; their depths, numbers, ſituations, ſigns, waters, damps, quantities of ores, goodneſs of the ores, and the ways in uſe for the reducing them to metals.

NATURAL INCLINATIONS, the tendencies of our minds towards things ſeemingly good.

NATURAL PHILOSOPHY, that which conſiders the powers and properties of natural bodies, and their mutual actions on each other. The buſineſs of natural philoſophy, ſays Boerhaave, is to communicate a ſolid and accurate knowledge of all the bodies in being, and all the affections thereof. Nor can this ſcience be acquired otherwiſe than by obſerving, by means of our ſenſes, all the objects which the author of nature has made cognizable thereto : hence, the firſt and principal part of this ſcience is to collect all the manifeſt and ſenſible appearances of things, and reduce them into a body of natural hiſtory. Now there are two ways of making ſuch obſervations ; the firſt, when we view things nearly as they happen to turn up, without any deſign or intervention of our own; in which way no great improvements can be expected in the art, becauſe chance having here the direction, only exhibits occaſional or extemporary properties : the other method is, when, after a thorough acquaintance with bodies, we apply them to other bodies equally known, diligently attending to the reſult, and obſerving whether any thing new ariſes.

NATURAL, in muſic, a term variouſly uſed : thus natural muſic is the ſame with vocal, in oppoſition to artificial muſic, or that performed on inſtruments. A ſong is alſo called natural, when its notes move eaſily and gracefully. Natural harmony is that produced by the natural and eſſential chord of the mode.

A natural note is uſed to contradict thoſe flats and ſharps that are ſet at the beginning of a ſtave ; and in ſuch caſe it muſt be taken exactly as in the gamut.

NATURALIST, one well verſed in the ſtudy of nature, and the knowledge of natural bodies, eſpecially in what relates to animals, vegetables, metals, minerals, and ſtones.

NATURALIZATION, in law, the act of naturalizing an alien, or placing him in the condition of a natural born ſubject.

NATURALS, *Res Naturales*, among phyſicians, whatever naturally belongs to an animal, in oppoſition to non-natural. See *Non Naturals*.

NATURE, *Natura*, according to Mr. Boyle, has eight different ſignifications ; it being uſed, 1. For the author of nature, whom the ſchoolmen call *Natura Naturans*, being the ſame with god. 2. By the nature of a thing we ſometimes mean its eſſence ; that is, the attributes which make it what it is, whether the thing be corporeal or not ; as when we attempt to define the nature of a fluid, of a triangle, &c. 3. Sometimes we confound that which a man has by nature, with what accrues to him by birth ; as when we ſay that ſuch a man is noble by nature. 4. Sometimes we take nature for an internal principle of motion ; as when we ſay, that a ſtone by nature falls to the earth. 5. Sometimes we underſtand by nature the eſtabliſhed courſe of things. 6. Sometimes we take nature for an aggregate of powers belonging to a body, eſpecially a living one ; in which ſenſe phyſicians ſay, that nature is ſtrong, weak, or ſpent ; or that, in ſuch and ſuch diſeaſes, nature left to herſelf will perform the cure. 7. Sometimes we uſe the term nature for the univerſe, or whole ſyſtem of the corporeal works of God ; as when it is ſaid of a phœnix, or chimera, that there is no ſuch thing in nature. 8. Sometimes too, and that moſt commonly, we expreſs by the word nature a kind of ſemi-deity, or other ſtrange kind of being. If, ſays the philoſopher, I were to propoſe a notion of nature, leſs ambiguous than thoſe already mentioned, and with regard to which many axioms, relating to that word, may be conveniently underſtood, I ſhould firſt diſtinguiſh between the univerſal and the particular nature of things. Univerſal nature I would define to be the aggregate of the bodies that make up the world, in its preſent ſtate, conſidered as a principle ; by virtue whereof they act and ſuffer according to the laws of motion preſcribed by the author of all things.

And this makes way for the other ſubordinate notion ; ſince the particular nature of an individual conſiſts in the general nature, applied to a diſtinct portion of the univerſe ; or, which is the ſame thing, it is a particular aſſembledge of the mechanical properties of matter, as figure, motion, &c.

NAVAL, relating to a ſhip.

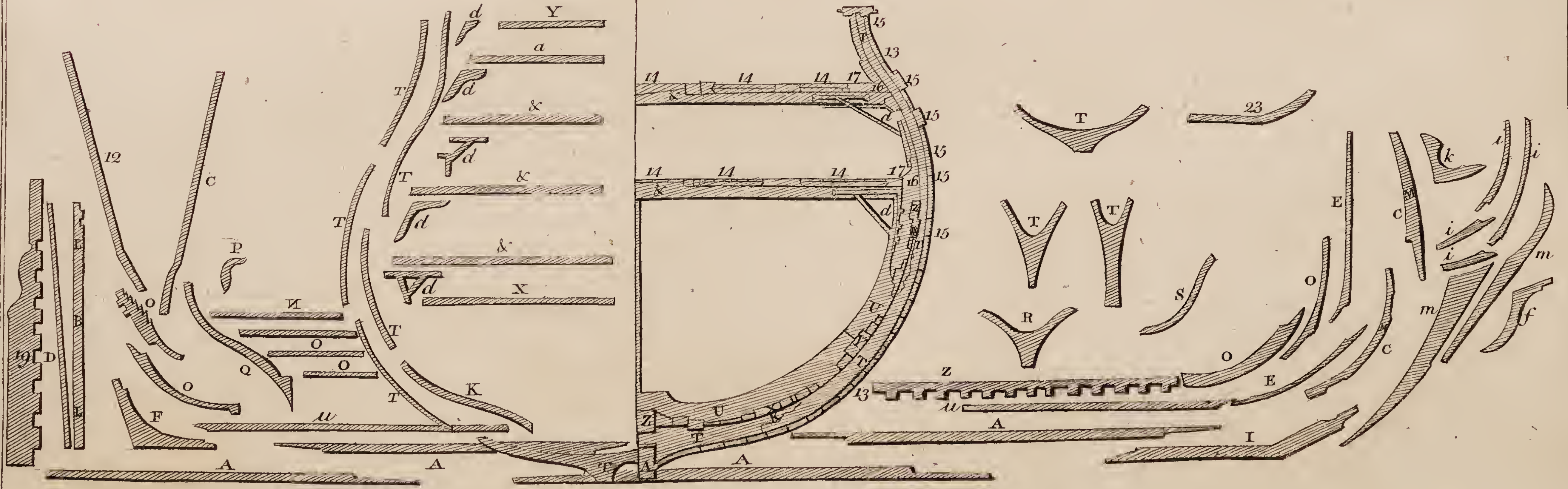
NAVAL ARCHITECTURE, the art of deſigning the figure, forming the ſeveral limbs, and conſtructing the hull or lower frame of a ſhip, diſtinct from the ſuper-ſtructure, which comprehends her machinery and furniture for ſailing, which laſt is explained under the articles *Maſt*, *Sails*, and *Rigging*.

To whom the world is indebted for the invention of ſhips is, like all other things of equal antiquity, uncertain : if we liſten to the fables of the poets, we ſhall be extremely divided in our opinion amongſt the variety of competitors. Prometheus, Neptune, Janus, Atlas, Hercules, Jaſon, Danaus, Erythraeus, &c. appear with ſufficient authority to claim our aſſent :

Plate XXXV.

Facing Naval Architecture.

Midship Frame.



but Minerva, the auſpicious parent of arts and ſcinces, ſeems to have a ſuperior title, and to her, probably, with more propriety, it has been attributed by fame. But ſome who reject theſe fabulous traditions, and pretend to greater certainty in their allegations, aſcribe it to the inhabitants of ſome places that border on the ſea, and ſeem appropriated by nature for harbouring ſhips, ſuch as the Phœnicians, Aeginenſians, &c. This difference of opinions appears naturally to have riſen, on obſerving the various places where navigation was firſt practiſed, or from the different conſtruction and equipage of ſhips; ſome of which having been built by the abovementioned perſons, have entitled them to the whole invention. A ſmall portion of art or contrivance was ſeen in the firſt ſhips; they were neither ſtrong nor durable, but conſiſted only of a few planks laid together, without beauty or ornament, and juſt ſo compacted as to keep out the water. In ſome places they were only the hulks or ſtocks of trees hollowed, and then conſiſted only of one piece of timber; nor was wood alone applied to this uſe, but any other bouyant materials, as the Egyptian reed papyrus, or leather, of which the primitive ſhips were freqeuntly compoſed; the bottom and ſides being extended on a frame of thin battens or ſcantlings, of flexible wood, or begirt with wickers, ſuch as we have frequently beheld among the American ſavages ourſelves. In this manner they were often navigated upon the rivers of Ethiopia, Egypt, and Sabæan Arabia, even in latter times. But in the firſt of them, we find no mention of any thing but leather or hides ſewed together. In a veſſel of this kind Dardanus ſecured his retreat to the country afterwards called Troas, when he was compelled by a terrible deluge, to forſake his former habitation of Samothrace. According to Virgil, Charon's infernal boat was of the ſame compoſition. But as the other arts extended their influence, naval architecture likewiſe began to emerge from the gloom of ignorance and barbariſm; and as the ſhips of thoſe ages were increaſed in bulk, and better proportioned for commerce the appearance of thoſe floating citadels of unuſual form, full of living men, flying with ſeemingly expanded wings over the ſurface of the untravelled ocean, ſtruck the ignorant people with terror and aſtoniſhment: and hence, as we are told by Ariſtophenes, aroſe the fable of Perſeus flying to the Gorgons, who was actually carried thither in a ſhip. Hence, in all probability, the famous ſtory of Triptolemus riding on a winged dragon is deduced, only becauſe he ſailed from Athens, in the time of a great dearth, to a more plentiful country, to ſupply the neceſſities of his people. The fiction of the flying horſe Pegaſus may be joined with theſe, who, as ſeveral mythologiſts report, was nothing but a ſhip with ſails, and thence ſaid to be the ofspring of Neptune, the ſovereign of the ſea: nor does there appear any other foundation for the ſtory of griffons, or of ſhips transformed into birds and fiſhes, which we ſo often meet with in the ancient poets.

With regard to modern naval architecture, it is neceſſary to obſerve here, that it is ſo complicated, extenſive, and various, comprehending ſuch a diverſity of ſtructures, that treat the ſubject at large with accuracy and preciſion would fill a large volume of itſelf, and therefore greatly exceed our bounds; and being thus neceſſitated to contract our deſcription, we ſhall reſt ſatisfied with giving our readers a general idea of the principles of the art, the neceſſary qualities of a ſhip, and a deſcription of the principal members that compoſe this noble machine, in which we ſhall decline, as much as poſſible, to diſtract their imagination by leading them into a labyrinth of technical terms.

Naval architecture then ought to be reduced to the examination of three different queſtions; 1. Thoſe which determine the figure of a ſhip; 2. thoſe which contribute moſt to her ſolidity; 3. thoſe which beſt facilitate her plans; that is, 1. her figure or outward form ought to be ſuitable to the ſervice for which ſhe is deſigned; 2. the exact ſhape of all the pieces of timber neceſſary to compoſe ſuch a fabric ſhould be found; 3. convenient apartments ſhould be made for the artillery, ammunition, proviſions, and cargo; together with ſuitable accommodations for the officers and men.

In order to give the bottom a proper figure, all the qualities neceſſary to make her anſwer the ſervice for which ſhe is deſigned ſhould be conſidered.

A ſhip of war ſhould carry her lower tier of guns four or five feet out of the water. A ſhip for the merchant-ſervice ſhould ſtow her cargo well; and be ſo faſhioned as to go well, carry a good ſail, ſteer eaſily, and lie in a high ſea without ſtraining.

Some eminent geometricians have endeavoured to diſcover the form of a ſolid that will anſwer all theſe purpoſes beſt, or meet with the leaſt reſiſtance in dividing the fluid through which it is to paſs; but have not been able to reduce their theory to practice, on account of the various ſituations in which a ſhip is obliged to lie when under ſail. The artificers thus deſpairing to eſtabliſh this point by mathematical rules, have applied themſelves entirely to experience and obſervation, which may greatly ſupply the deficiency of art; but though they may diſcover that a ſhip has bad qualities, it may be difficult to determine where they lie, or whether they are in the hull or rigging; but if their obſervations be aided by mathematical principles, it will certainly conduce very much to attain the deſired end.

But as many ſhips have been built, which ſeem to anſwer every purpoſe for which they w re calculated, ſome builders have ſtudied chiefly to copy thoſe which are approved by the ſeamen; and this method they very improperly regard as the principal rule to be obſerved in building. Now as the bodies of ſhips are very different, there are of courſe variety of different models adopted as ſtandards. But admitting a poſſibility to diſcover ſuch a body as ſhould give entire ſatisfaction, and have every good quality requiſite for the ſervice propoſed, yet this could by no means be eſtabliſhed as a ſtandard for ſhips of a different ſize to be copied from, ſince altho' we may have a firſt rate of 100 guns, which have been found by experience to be a very good ſhip in every reſpect; yet we ſhould be much deceived to build a 20 gun-ſhip, in which all the parts bore a ſimilar proportion to one another, which they have in the firſt rate. It has been remarked above, that a ſhip of war muſt carry her loweſt tier of cannon high enough above the water, otherwiſe a great ſhip, which cannot open her lower battery, when ſailing with a freſh ſide wind, may be taken by a ſmall one that can make uſe of her cannon.

A ſhip ſhould be duly poiſed, ſo as not to dive or pitch heavily, but to go ſmooth and eaſy through the water, riſing to the waves when they run high, and the ſhip has reduced her ſail to the ſtorm; otherwiſe they will break abroad, and ſtrain the decks, or carry away the boats: the maſts are likewiſe in great danger from the ſame cauſe.

A ſhip ſhould ſail well when large and before the wind, but chiefly cloſe hauled, or with a ſide wind, and her ſails ſharp trimmed, and then not fall off to the leeward.

Now the great difficulty lies in uniting ſo many different qualities in one ſhip, which ſeems to be nearly impoſſible; the whole art therefore conſiſts in forming the body in ſuch a manner that none of theſe qualities ſhould be entirely deſtroyed, and in giving a preference to that which is chiefly required in the particular ſervice for which the veſſel is deſigned; we ſhall briefly ſhow the poſſibility of uniting them all in one ſhip, that each of them may be eaſily diſcerned: when it happens otherwiſe, the fault muſt lie in the builder, who has not applied himſelf to ſtudy the fundamental rules and principles of his art.

To make a ſhip carry a good ſail. A flat floor-timber, and ſomewhat long, or the lower-futtock pretty round, a ſtraight upper-futtock, the top timber to throw the breadth out aloft; at any rate to carry her main breadth as high as the lower-deck. Now if the rigging be well adapted to ſuch a body, and the upper-works lightened as much as poſſible, ſo that they all concur to lower the center of gravity, there will be no room to doubt of her carrying a good ſail.

To make a ſhip ſteer well, and anſwer the helm quickly. If the faſhion-pieces be well formed, the tuck, or ſpreading parts under the ſtern carried pretty high, the midſhip-frame well-forward, a conſiderable difference in the draught of water abaft more than afore a great rake forward, and none abaft, a ſnug quarter-deck and forecaſtle, all theſe will make a ſhip ſteer well. A ſhip which ſails well, will certainly ſteer well.

To make a ſhip carry her guns well out of the water. A long floor-timber, and not of great riſing; a very full midſhip-frame, and low tuck, with light upper-works.

To make a ſhip go ſmoothly through the water without pitching hard. A long keel, a long floor, not to riſe too high afore and abaft; but the area or ſpace continued in the fore-body, according to the reſpective weight they are to carry; all theſe are neceſſary to make a ſhip go ſmoothly through the water.

To make a ſhip keep a good wind, and drive little to the leeward. A good length by the keel; not too broad, but pretty deep in the hold, which will occaſion her to have a ſhort floor-timber, and a great riſing.

As ſuch a ſhip will meet with great

reſiſtance in the water going over the broadſide, and little when going a-head, ſhe will not fall much to the leeward.

Now ſome builders imagine it is impoſſible to make a ſhip carry her guns well, bear a good ſail, and be a prime ſailer; becauſe it would require a very full bottom to gain the firſt two qualities, whereas a ſharp ſhip will anſwer better for the latter; but when it is conſidered that a full ſhip will carry a great deal more ſail than a ſharp one, a good artiſt may ſo form the body, as to have all thoſe three good qualities, and alſo ſteer well. After what has been ſaid on this, it certainly cannot be thought impoſſible to unite all theſe different qualities in one ſhip: giving the water a proper curve, ought likewiſe to be conſidered, upon which the beauty and ſtatelineſs of a ſhip greatly depend; ſince it is this which makes a ſhip look airy and graceful in the water. There is no certain rule for laying them down; this is left entirely to the fancy and taſte of the artiſt, which, as we have more than once obſerved, is not often of the moſt delicate degree, or corrected by truth and judgment; witneſs the barbarous and unnatural mixture of Gothic and Chineſe ornaments, "clumſy heroes and fat-headed gods," on the ſame ſhip, the monſtrous iſſue of a ſavage conception and way-ward genius, as deformed and perverſe as their own cant-timbers.

As we cannot without greatly exceeding our limits treat particularly of all the pieces that compoſe a ſhip, we have here defined all the principle pieces, and laid down each piece ſeparately (plate xxxv.), by which means the length of the ſcarfs are deſcribed, and the manner in which they are joined together.

Explanation of Plate xxxv.

A. The keel, in four pieces, to be firmly bolted together and clinched.

1. The fore-foot, one end of which is ſcarfed to the fore-end of the keel, of which it is a part, and the other end makes a part of the ſtem, to which it is ſcarfed.

u u. Two pieces of dead-wood, one afore and the other abaft, fayed upon the keel.

C. C. The ſtem in two pieces to be ſcarfed together: it is the circular piece of timber where both the ſides of the ſhip unite forward.

E. E. The apron, in two pieces, to be ſcarfed together, and fayed on the inſide of the ſtem, to ſupport the ſcarf of the ſtem; for which purpoſe the ſcarf of the apron muſt be clear from that of the ſtem.

o. The ſtemſon in two pieces, to ſupport the ſcarf of the apron

o. The falſe poſt, which is fayed to the fore-part of the ſtern poſt. Faying is fitting two pieces of wood, ſo as that one may be joined to the back, or inſide of the other, ſo as to lie cloſe.

B. The ſtern-poſt: it is tenanted into the keel, to which it is faſtened with a knee; and is that ſtreight piece of timber at the after-end of the ſhip, into which both the ſides are united.

D. The back of the poſt, which is likewiſe tenanted into the keel, and ſecurely bolted to the ſtern-poſt; the deſign of it is to give ſufficient breadth to the poſt, which ſeldom can be procured of a ſufficient breadth in one piece.

F. The knee which faſtens the poſt to the keel.

N. The wing-tranſom. It is fayed acroſs the ſtern-poſt, and bolted to the head of it: the faſhion-pieces are faſtened to the end of it; under this, and parallel to it, is the deck tranſom.

O O. Two tranſoms faſtened to the ſtern-poſt and faſhion-pieces, in the ſame manner as the wing-tranſom.

P. The tranſom-knee which faſteneth it to the ſhip's ſide.

Q. The faſhion-piece, of which there is one on each ſide: their heels are faſtened to the ſtern-poſt, at the height of the floor-ribbands, and their heads are faſtened to the wing-tranſom.

T. A floor-timber. It is fayed acroſs the keel, to which it is faſtened by a bolt through the middle.

T T T T T. 2d, 3d, 4th futtocks and top timbers. Theſe ſhew the proper length and ſcarf of the timbers, in what is called the midſhip-frame, which is a plane comprehended between the two ſides, at their extreme breadth, and the keel to which it is perpendicular; ſo that if a ſhip were cut through perpendicular to her length, and at her greateſt breadth, the exterior and interior part of both ſides from the upper parts or edges, called the gunnels, down to the keel, would exhibit the midſhip frame. The futtocks are to be joined, to complete a frame of timbers.

U U. Riders. Theſe are fayed on the inſide of the ſhip acroſs the keel, and ſtand in the ſame manner as the timbers, and conſiſt of floor and futtock riders.

Z. The kelſon: this is made of two

or three large pieces of timber ſcarfed together in the ſame manner as the keel. It is placed over the middle of the floor timber, and ſcored about an inch and a half down upon each of them.

R, S. Breaſt-hooks: theſe are fayed on the inſide acroſs the ſtern, and to the bow on each ſide of it, to which they are faſtened with proper bolts. There are generally four or five in the form of an R in the hold, one in the form of S, into which the lower-deck planks are rabbetted; there is one right under the hawſe holes, and another under the ſecond deck.

X, Y, Z. Are thick planks which are fayed to the inſide, and ſtretch fore and aft, or from one end of the ſhip to the other, to ſupport the ſcarfing of the timbers.

Z. Are thick planks in the inſide called clamps, which ſuſtain the end of the beams.

15, 15, 15, 15, 15. Are the wales: they are planks broader and thicker than the reſt, which are faſtened to the outſide of the ſhip on a line with the decks: with regard to the planks reaching from the wale upwards to the top of the ſide, and downwards to the keel, the reader is referred to the ſection of one half of the midſhip-frame, as laid down in the plate.

d, *d*, *d*, *d*, *d*, *d*, *d*. Are knees Theſe are crooked pieces of timber conſiſting of two arms, which form an angle ſometimes acute, and ſometimes obtuſe or rectangular: their uſe is to faſten any two pieces together; as the beams to the ſhip's ſide, &c.

19. The rudder: this is joined to the ſtern-poſt by the rudder-irons, upon which it turns round in the googings, which are faſtened upon the ſtern-poſt for that purpoſe. There is a mortiſe cut through the head of it, into which a long bar is fitted, called the tiller, by which the rudder is turned from one ſide to the other, and both parts together are called the helm.

23. The cat-heads. Theſe are two large ſquare pieces of timber, one on each ſide of the bowſprit: they project from the bow over the ſide, in order to keep the anchor clear of the ſhip, which is drawn up by a rope called the cat-fall, which paſſes through certain pullies, called ſheaves, in the outer-end of the cat-head: their inner-ends are faſtened upon the fore-caſtle.

m, *m*; *i*, *i*, *i*. Are the ſeveral pieces which compoſe the knee of the head, called by ſeamen the cut-water; the lower part *m* is fayed to the ſtem, the keel of it is ſcarfed to the head of the fore-foot; it is faſtened to the bows by two knees, called cheeks, and to the ſtem by a knee called a ſtandard, in the form of a K.

a, X, Y. Are beams, or large pieces of timber which ſupport the planks of each deck. See the article *Beams*. The reader will readily diſcover that the two ſides of the midſhip frame in the middle of the plate are ſo diſpoſed, that all the pieces on one ſide may be ſeen before they are joined, and on the other after they are fixed in their proper places.

In ſhips of war the general dimenſions are eſtabliſhed by the authority of thoſe appointed by the government for that purpoſe. In the merchants ſervice, the extreme breadth, length of the keel, depth in the hold, and height in the waſte, and between decks; and ſometimes the height and breadth of the wing-tranſom, are agreed on by contract: and from theſe dimenſions the builder is to form a draught ſuitable to the trade for which ſhe is deſigned.

We refer ſuch readers as wiſh to be particularly informed of ſhip-building to M. Du Hamel's curious and uſeful Elements of Naval Architecture. Mr. Mungo Murray has alſo publiſhed a book on this ſubject, called a Treatiſe on Ship-building, &c. which muſt be of great ſervice to the younger artificers of this profeſſion, as it contains variety of very accurate drawings of ſhips An abridgment of M. Du Hamel's book referred to above, is alſo tranſlated, and annexed to Murray's Treatiſe.

NAVAL-ARMAMENT, the ſame with fleet of ſhips of war, which ſee.

NAVAL-CAMP, in antiquity, a fortification, conſiſting of a ditch and parapet on the land-ſide, or a wall built in the form of a ſemi-circle, and extended from one point of the ſea to another. This was ſometimes defended with towers, and beautified with gates, through which they iſſued forth to attack their enemies. Homer hath left us a remarkable deſcription of the Grecian fortifications of this ſort, in the Trojan war, beginning at v. 436. Iliad *η*.

Towards the ſea, or within it, they fixed great pales of wood, like thoſe in their artificial harbours; before theſe the veſſels of burthen were placed in ſuch order, as that they might be inſtead of a wall, and give protection to thoſe within; in which manner Nicias is reported by Thucydides to have encamped himſelf: but this ſeems only to have been practiſed when the enemy was thought ſuperior in ſtrength, and raiſed great apprehenſions of danger in them. When their fortifications were thought ſtrong enough to defend them from the aſſaults of enemies, it was frequent to drag their ſhips to ſhore, which the Greeks called ενωλκειν, the Romans *ſubducere*. Around the ſhips the ſoldiers diſpoſed their tents, as appears every where in Homer; but this ſeems only to have been practiſed in winter, when their enemy's fleet was laid up and could not aſſault them, or in long ſieges, and when they lay in no danger from their enemies by ſea, as in the Trojan war, where the defenders of Troy never once attempted to encounter the Grecians in a ſea-fight. The adjacent places were uſually filled with inns, and ſtews, well ſtocked with females, that proſtituted themſelves to the mariners, merchants, and artificers of all ſorts, who flocked thither in great numbers; this however appears to be only in times of peace. *Potter's Antiquities of Greece.*

NAVEL Engagement, either a ſea-fight between ſingle ſhips or fleets of men of war, or gallies, &c.

The ancients ranged their ſhips or gallies ſo far as to preſent them in front to their enemy; becauſe the machines they then made uſe of, were fixed in the heads or prows of their veſſels: the ſame reaſon now prevails with regard to the gallies, which are drawn up in the form of a creſcent, or half-moon, whoſe ends or horns are oppoſed to the enemy; in the middle of which is the admiral, from whence he the more diſtinctly obſerves the motions of his fleet throughout. The two fleets being thus drawn up, approach each other to a convenient diſtance, when the battle beginning at the ends of the half-moon, extends inſenſibly till the whole fleet is engaged, and each partakes of the danger and glory of the action.

It is probably the moſt expedient method, as proved by experience, to keep a conſtant cannonade on the enemy, by firing in platoons, which will have a much greater effect, and diſtreſs them more, than the common received notion of a broad-ſide and broad-ſide with ſome intervals between, which is generally the caſe in moſt actions; in order to which, it will be moſt prudent to divide the guns into five fires, in the following manner, viz. half the guns abaft below, then half the guns abaft aloft, ſo the other half below forward; and, laſtly, the quarter-deck guns, and thoſe on the fore-caſtle: ſo that, by the time your firſt platoon is fired, you will be able to keep up a conſtant fire on your enemy, which method is preferable, as was obſerved before, to broad-ſide and broad-ſide, where chance has often a greater ſhare in the execution than judgment: notwithſtanding, this laſt method is ſometimes neceſſary, as time and circumſtances may offer. It is likewiſe neceſſary to point your guns ſo as to make a breach in your enemy's ſhip. The chief judgment of an admiral, is to form his line in a proper diſpoſition and ſtrength from the van throughout to the rear; in doing which, particular care muſt be had to make the center ſtrong, for if that be forced, or broke through, the battle is looked upon as loſt. Here it is to be obſerved, that, in a ſea-action, the center is made the ſtrongeſt, whereas in a land-fight it is the weakeſt; and the wings of an army are ſtrongeſt, leſt the enemy, by forcing a wing, ſhould have the advantage of flanking, and conſequently putting the line in diſorder: for the ſame reaſon alſo, the van and rear of a fleet is not put into confuſion, becauſe care is taken to make them proportionally ſtrong to reſiſt the enemy: therefore the weakeſt part of the line will be in the quarters, ſupported each way from the center throughout. The ſignal being made for battle, every captain crouds immediately into his proper ſtation: they endeavour to approach each other till within point-blank gun ſhot, which is near enough for a line of battle; for if you ſhould be too near, your line will naturally fall into a curve, notwithſtanding all your endeavours to the contrary: beſides, you cannot ſo well obſerve your own line; the enemy may intercept your ſight, eſpecially if the line be long, which may cauſe a miſtake in the ſignals. It would be better for the contending admirals in chief, that each had a view of his own line, as well as that of the enemy, in order to make proper ſignals, and, if any diſtreſs happen, to be the better able to relieve, or if any advantage, to improve upon it. The battle being begun, the fate of war decides the day. In a word, the ſucceſs of all depends upon placing your ſhot well, and preſerving a proper diſpoſition in the line. There is one maxim, by which we ſhould always be guided, that is, that bravery and reſolution are abſolutely neceſſary in the firſt ſort of engagement, viz. between ſingle ſhips; and conduct and bravery in the ſecond ſort, viz. that between two ſquadrons. Conduct and preſence of mind are chiefly requiſite in a line of battle; for the admiral cannot be ſuppoſed to want bravery and reſolution. It is then he muſt ſummon up all his knowledge and experience to judge of the ſtrength of his line; when and how to keep it as complete as poſſible, by ordering ſhips from the corps-de-reſerve, or by changing ſhips from one part of the line to the other, or by detaching from one part of the wings, which may not be ſo much preſſed, to that which is Here he muſt alſo conſider the poſition of his enemy; his eyes muſt be on him, as well as on his own line, from the van to the rear; and all ſhould ſtrictly mind the admiral's motion, ſignals, &c. Boats will, in all probability, be continually paſſing from the ſhips to their flag-officers, if any thing extraordinary ſhould happen, to acquaint them of it: and from the admirals, or commanding officers, of each diviſion to the admiral in chief, giving an account of the ſtate and condition of each diviſion, which will be a great ſatisfaction to him, as he will then be better able to judge how to aſſiſt where moſt wanted when occaſion requires, or how to improve upon any advantage gained. The battle drawing to a concluſion, it is eaſy to judge what the conqueror will do to improve his victory; as neceſſary a part of an officer as any in the action, as it requires great judgment and readineſs of thought; and the other, in making his retreat, ſhould let ſlip no opportunity to ſave as many of his fleet as he poſſibly can. His eye muſt be quick, and his judgment and preſence of mind as ready as at the firſt onſet of the battle. He has no other reſource left but in his eſcape, and this comfortable alleviation of his defeat, that a glorious retreat may gain him as much honour as the victory did to the conqueror. See *Retreat.*

* NAVARRE, a kingdom of Europe, lying between France and Spain, divided into the Upper and Lower. The Upper Navarre belongs to Spain, and is bounded by the Pyrenean mountains on the eaſt, which parts it from Gaſcony; by the kingdom of Arragon on the ſouth; by Old Caſtile on the weſt; and by Biſcay on the north. It is a mountainous country, but has ſome fruitful valleys, and abounds in all ſorts of game, and mines of iron. The inhabitants are laborious and active. It is divided into five diſtricts, whoſe capitals are Pampeluna, Stella, Tudella, Olita, and St. Gueca. Lower Navarre belongs to France, and has but one diſtrict, the capital of which is St. John Pied de Port. It is ſeparated from Spaniſh Navarre by the Pyrenean mountains, and is a mountainous barren country. In general, this country is not very rich; however, there are tolerable paſtures, and the air is very pure, and not ſo hot as in the reſt of Spain. Navarre had its own kings for ſeven hundred and ninety-four years; that is, from 718 to 1512, when Ferdinand the Catholic took it from John d'Albret, under pretence of his being excommunicated by the pope.

NAVE, in architecture, the body of a church, where the people are diſpoſed, reaching from the balluſter, or rail of the choir, to the chief door.

Some derive the word nave from *ναος*, a temple; and others from *ναυς*, a ſhip, by reaſon the vault or roof of a church bears ſome reſemblance to a ſhip.

NAVEL, *Umbilicus,* in anatomy. See the article *Umbilicus.*

NAVEL-WORT, cotyledon, in botany. See the article *Cotyledon.*

NAVEW, *Napus,* in botany, a plant of the turnip kind, with oblong roots, growing ſlender from the top to the extremity.

NAVEW, *Napus Sativa,* garden or ſweet navew, or French turnip; cultivated for the culinary uſe of its roots, which are warmer and more grateful than thoſe of the common turnip, and are ſaid to afford likewiſe, in their decoctions, a liquor beneficial in diſorders of the breaſts.

NAVEW, *Napus Silveſtris,* wild navew or rape, growing on dry banks and among corn, with leaves ſomewhat different from thoſe of the former, being more thoſe of cabbages than of turnips; the root ſmaller, and of a ſtronger unpleaſant taſte; and the ſeeds alſo rather more pungent, on which account they are preferred by the faculty of Paris. The ſeeds of both kinds yield upon expreſſion a large quantity of oil: the oil called rape-oil is extracted from the ſeeds of the wild ſort, which is cultivated in abundance, for that uſe, in ſome parts of England. The cake remaining after the expreſſion of the oil, retains, like that of muſtard, the acrimony of the ſeeds. See *Rape-ſeed.*

NAVIGATION, the theory and art of conducting ſhips by ſea, from one port to another, or of diſpoſing and actuating their machinery, by the force of the wind, ſo as to begin and continue their motion at ſea. Moſt of thoſe uſeful arts and admirable inventions which are the very ſupport of mankind, and ſupply them with all the neceſſaries and conveniencies of life, have at firſt been the production of ſome lucky chance, or from ſlight beginnings have been, by long experience, cautious obſervations, and various improvements, matured and brought to perfection. Inſtances of this kind are every where frequent and obvious, but none can be produced more remarkable than in the art of navigation, which though now arrived to a pitch of perfection beyond moſt other arts, was in the beginning ſo mean and imperfect, that the pleaſure or advantage of thoſe who firſt applied themſelves to it was very ſmall and inconſiderable. Thoſe who adventured to commit themſelves to the liquid element made their firſt eſſays in ſhallow waters, cautious of truſting themſelves at any conſiderable diſtance from the ſhore; but being emboldened by repeated trials, proceeded farther by degrees, till at length they took courage and launched forth into the main ocean. To this purpoſe Claudian expreſſes himſelf in Latin, which we may thus tranſlate:

Who launch'd the firſt bold veſſel on the deep,
And bade his aukward oars the waters ſweep;
Cautious, adventur'd on the margin-wave
At firſt; afraid the diſtant ſurge to brave:
Advancing farther, to the powerful gale,
High on the maſt he ſpread the ſwelling ſail.
Till by degrees he wander'd from the ſhore,
Unconſcious of thoſe fears he felt before;
And guided by ſome ſtar's auſpicious ray,
His bark undaunted cleav'd the watery way,
Along the Ægean and Ionian ſeas.

The heavenly bodies were obſerved by ſailors on a two-fold account, being of uſe to them in prognoſticating the ſeaſons, and as guides to ſhape their courſe. The principal of thoſe uſed in foretelling, were Arcturus, the Dog-ſtar, Arae, Orion, Hyades, Hœdi, Caſtor and Pollux, Helena, &c. It was likewiſe cuſtomary to take notice of various omens offered by ſea-fowls, fiſhes, and divers other things, as the murmuring of the floods, the ſhaking and buzzing noiſe of trees in the neighbouring woods, the daſhing of the billows againſt the ſhore, and many more, in which all good pilots were nicely ſkilled. As to the direction in their voyage, the firſt practitioners in the art of navigation, being unacquainted with the reſt of the celeſtial motions, ſteered all the day by the courſe of the ſun; at night betaking themſelves to ſome ſafe harbour, or reſting on the ſhore, and not daring to venture to ſea till their guide was riſen, to diſcover their way: that this was their conſtant cuſtom, may be obſerved from the ancient deſcriptions of thoſe times. See Virg. Æn. 3. v. 508. *Sol ruit interea, et montes umbrantur opaci, &c.* Afterwards the Phœnicians, called, by ſome, the firſt inventors of navigation, diſcovered the motions of ſome other ſtars, as may be obſerved by Pliny and Propertius. The Phœnicians we find to have been directed by Cynoſura, or the leſſer bear-ſtar, which was firſt obſerved, as ſome are of opinion, by Thales the Mileſian, who was originally a Phœnician, when the mariners of Greece, as well as other nations, ſteered by the greater bear: for the firſt obſervation of this, they were obliged to Nauplius, if we may believe Theon; or according to the report of Flaccus to Tiphys, the pilot of the famous ſhip Argo. But of theſe two we are told by Theon, the former was the ſecurer guide, and therefore was followed by the Phœnicians, who, for ſkill in marine affairs, outſtript not only all the reſt of the world, but even the Grecians themſelves. That the oars might ſtrike the water, and proceed in a regular and conſtant motion, keeping due time with each other, they had Τριηραυλης, a muſician, who, by the harmony of his voice and inſtrument, not only directed the rowers in their motions to ſtrike uniformly, but raiſed their ſpirits when weary with labour and ready to faint, as we read in Statius, Thebaid, v. 342.

Acclinis malo mediis interſonat Orpheus
Remigiis tantoſque jubet neſcire labores.

Againſt the maſt the tuneful Orpheus ſtands,
Plays to the weary rowers, and commands
The thought or toil away——

After they had invoked the protection

of their gods by ſolemn prayers and ſacrifices, which, as they offered to other deities, ſo more eſpecially to thoſe who had any concern or command in the ſea; to the winds and tempeſts, the whole train of marine gods and goddeſſes, but, above all to Neptune, they ſpread ſail and put to ſea. Nor was it enough for themſelves alone to petition the gods for ſafety and ſucceſs, but all the multitudes that thronged on theſe occaſions to the ſhore, earneſtly recommended them to the divine protection, and joined their fervent prayers for their deliverance from all the dangers they were going to encounter Since the great improvement of navigation, theſe practices have, however, been intirely laid aſide by the moderns.

This done, we are told by the Scholiaſt upon Apollonius, that it was uſual to let fly a dove, which no doubt was looked on as an omen of ſafe return, becauſe that bird is not eaſily forced to relinquiſh its habitation, but when driven away delights to return. Then they put to ſea, the ſignal being given by a ſhout, by ſound of trumpet and ſeveral other ways. In the night it was uſually given by torches lighted in the admiral-galley.

The ſhips were uſually ranged in this order; in the front went the lighter veſſels; after theſe followed the men of war, led on by the admiral, which was commonly diſtinguiſhed from the reſt by the richneſs of her ornaments: laſt of all, the veſſels of burden came up. If the winds were high, or the ſea dangerous, they were extended at length, ſailing one by one; but at other times they went three or more in a breaſt.

Tyre, the capital of the Phœnicians, whoſe commerce, riches, and power, are repreſented in ſuch lofty terms, both in ſacred and profane authors, being furniſhed with excellent wood for ſhip-building, was very ſoon miſtreſs of a numerous fleet, with which the inhabitants conſtantly embarking on new expeditions, and ſettling new trades, they ſoon arrived at an incredible pitch of opulence and populouſneſs; inſomuch as to be in a condition to ſend out colonies, the principal of which was that of Carthage; which keeping up the Phœnician ſpirit of commerce, in time it not only equalled Tyre itſelf, but vaſtly ſurpaſſed it, ſending its merchant-fleets through Hercules's pillars, now the ſtreights of Gibraltar, along the weſtern coaſts of Africa and Europe, and, if we may believe ſome authors, to America itſelf; the diſcovery whereof, ſo many ages afterwards, has been ſo glorious to the Spaniards.

After the deſtruction of Tyre by Alexander the Great, its navigation and commerce were transferred to Alexandria, a new city, admirably ſituated for thoſe purpoſes, and propoſed for the capital of the empire of Aſia, which Alexander then meditated And thus aroſe the navigation of the Egyptians, afterwards ſo cultivated by the Ptolemies, that Tyre and Carthage, which laſt, after having a long time diſputed empire with the Romans, was at length ſubdued, were quite forgot.

Egypt being reduced itſelf into a Roman province, after the battle of Actium, its trade and navigation fell into the hands of Auguſtus, in whoſe time Alexandria was only inferior to Rome; and the magazines of the capital of the world were wholly ſupplied with merchandize from the capital of Egypt.

At length Alexandria itſelf underwent the fate of Tyre and Carthage; and the fall of Rome and its empire drew along with it not only that of learning and the polite arts, but that of navigation; the Barbarians, into whoſe hands it fell, contenting themſelues with the ſpoils of the induſtry of their predeceſſors.

Navigation thus travelled, together with the polite arts, to the eaſtward; but it does not appear which of the European nations, after the ſettlement of their new maſters, firſt betook themſelves to navigation and commerce. Some think it began with the French, though the Italians ſeem to have the juſteſt title to it, and are accordingly looked on as the reſtorers thereof, as well as the other arts and ſciences which had been baniſhed together, when the empire was torn aſunder: but at preſent the Britiſh navy hold an undiſputed empire over the main.

NAVIGATION, among the moderns, comprehends either the art of ſeamanſhip, or of conducting a ſhip by the laws of geometry, upon the wide and trackleſs ocean, or both.

By ſeamanſhip we would be underſtood to comprehend a perfect knowledge, as well of all the various machinery and furniture of a ſhip, as experience and ſkill to diſpoſe thoſe machines ſo judiciouſly, that by a mutual aſſiſtance of each other, they may begin and continue the motions of this complicated frame, according to the different deſigns which may be required, or the various exigencies to which it may be reduced. It likewiſe includes the art of renewing or keeping in repair the inſtruments and engines employed in all the purpoſes of navigation.

That part of navigation which regards the piloting or guiding a ſhip along the coaſt, can only be acquired by experience, as it chiefly comprehends a knowledge of the reigning winds, the ſetting of the tides, the different depths of water, and the various ſorts of ground diſcovered in different depths, as ſhells of many colours, ſand great and ſmall, clay, ooze, ſhingle, gravel, ſtones, &c. &c. by which the place of the ſhip may be known many times in the darkeſt night, and conſequently her diſtance from ſome known place on the coaſt. The bearings of the neareſt cape, headland, promontory, or iſland, is always ſet by the compaſs, and the diſtance allowed by computation, which experience and attention often make the ſeamen very perfect in. See *Coaſting*.

That part of navigation by which we underſtand the direction of a ſhip's courſe at ſea, and out of ſight of land, is formed on the principles of plain trigonometry; her progreſs is conſequently meaſured by geometrical rules, and determined by the ſides and angles of a right angled plain triangle, in which the hypothenuſe is converted into diſtance, the perpendicular into difference of latitude, the baſe into departure, and the angles into the courſe and its complement. See *Courſe*, *Departure*, *Difference of Latitude*, and *Diſtance*.

The courſe of the ſhip is known to be determined by the compaſs, and as the mate at the helm directs the ſhip's motion by this inſtrument, it is conſequently the firſt thing given in the triangles. The diſtance is next meaſured by the log-line and a half or quarter minute glaſs. See *Compaſs* and *Log-line*.

Thus having the courſe and diſtance given, we diſcover the difference of latitude and departure, by the following analogy.

As radius,
To the diſtance;
So is the ſine of the courſe,
To the departure.

As radius,
To the diſtance;
So is the co-ſine of the courſe,
To the difference of latitude.

Thus having found the miles of departure, which muſt neceſſarily mean caſting or weſting from the laſt meridian, we convert it into miles of longitude by mercator, and reduce the northing and ſouthing alſo into miles of difference of latitude; which operation being performed at every alteration of the courſe on a change of wind, or other accident, the whole northings, ſouthings, eaſtings, and weſtings, failed in twenty-four hours, are diſpoſed in four columns, and the leſſer numbers ſubtracted from the greater, leave the number of miles of difference of latitude north or ſouth, and of departure eaſt or weſt. The courſe and diſtance reſulting from theſe traverſes for the twenty-four hours, is then diſcovered by the following proportion,

As the difference of latitude,
To radius;
So is the departure,
To the tangent of the courſe.

As the ſine of the courſe,
To the departure;
So is radius,
To the diſtance.

But if the artiſt in the run of twenty-four hours has occaſion to believe from circumſtances, that the angle of the courſe is nearer truth than the ſide of the diſtance, and has proved the accuracy of his difference of latitude by a celeſtial obſervation, he will naturally chooſe to find his diſtance and departure by the courſe and the difference of latitude, and will then ſay,

As the co-ſine of the courſe,
Is to the difference of latitude;
So is radius,
To the diſtance.

And,

As radius,
To the diſtance;
So is the ſine of the courſe,
To the departure.

On the contrary, if the navigator has more reaſon to rely on the certainty of the diſtance than of the courſe, and has his difference of latitude confirmed by a ſolar obſervation, he is then furniſhed with two ſides of a right angled plain triangle, to diſcover the angle of the courſe and the third ſide; it will then be,

As the diſtance,
To radius;
So is the difference of latitude,
To the ſine complement of the courſe.

Which ſubſtracted from 90° gives the angle of the courſe: and then,

As radius,
To the diſtance;
So is the ſine of the courſe,
To the departure.

But if a ſhip has ſailed between the meridian and parallel, that is, any where on an angle between the four cardinal points, and is pretty exact in her courſe, as alſo in the miles of eaſting or weſting ſhe has made, called her departure, although the diſtance ſhe has run is not accurately determined, nor is her difference of latitude aſcertained; then will the two latter, viz. the diſtance and difference of latitude be diſcovered, by having the courſe and the departure given, as thus:

As the ſine of the courſe,
To the departure;
So is radius,
To the diſtance.

As the tangent of the courſe,
To the departure;
So is radius,
To the difference of latitude.

Laſtly, if a ſhip has ſailed a known diſtance, till the line of her departure is likewiſe aſcertained, and it be required to find the courſe ſhe has ſteered, and the difference of latitude ſhe has made, then muſt the departure and diſtance be given to find the courſe and difference of latitude.

As the diſtance,
To radius;
So is the departure,
To the ſine of the courſe.

As the tangent of the courſe,
To the departure;
So is radius,
To the difference of latitude.

Thus have we gone through the ſix caſes of that part of navigation, which is commonly called plain ſailing, and exactly ſimilar to the method of working Mercator's or Wright's, which ſuppoſes the degrees of latitudes to be protracted in the ſame ratio, as the degrees of longitude are diminiſhed in their approaches towards the poles of the earth. See *Meridional* and *Mercator*.

This extenſion of the degrees of latitude, and conſequently of the difference of latitude between any two places, is called the meridional difference of latitude, and is found by taking the meridional parts of any two places from a table calculated for all parallels and ſubtracting the leſſer from the greater number, if they are both ſituated north or ſouth of the equator. If one of them lies north, and the other ſouth, then is their meridional difference of latitude found by adding their meridional parts; and having this meridional difference given, together with their difference of longitude, we diſcover the courſe as in plain ſailing.

As the meridional difference of latitude,
To the difference of longitude;
So is radius,
To the tangent of the courſe.

As the co-ſine or ſine-complement of the courſe,
To the real difference of latitude;
So is radius,
To the diſtance.

Caſe II. The courſe and diſtance ſailed being given, to find the difference of latitude and difference of longitude.

Firſt, for finding the difference of latitude by rectangular trigonometry, we have this proportion, viz. as radius is to the diſtance, ſo is the co-ſine of the courſe to the proper difference of latitude: and hence, it will be eaſy to find the meridional difference of latitude; and to find the difference of longitude, the proportion is, as radius to the meridional difference of latitude, ſo is the tangent of the courſe to the minutes of difference of longitude.

Caſe III. Both latitudes, viz. that ſailing from and coming to, being given; to find the diſtance ſailed, and the difference of longitude.

Firſt, for the difference of longitude, the proportion will be; as radius is to the enlarged or meridional difference of latitude, ſo is the tangent of the courſe to the minutes of difference of longitude.

Then for the direct diſtance, the proportion is, as radius to the proper difference of latitude, ſo is the ſecant of the courſe to the direct diſtance.

Caſe IV. Both latitudes and diſtance ſailed being given, to find the direct courſe and difference of longitude.

Firſt, for finding the angle of the courſe, the proportion is; as the proper difference of latitude is to radius, ſo is the diſtance ſailed to the ſecant of the courſe: then, for the difference of longitude, it will be; as radius to the meridional difference of latitude, ſo is the tangent of the courſe to the minutes of difference of longitude.

Caſe V. One latitude, courſe, and difference of longitude being given; to find the other latitude, and diſtance ſailed.

Firſt ſay, as the tangent of the courſe is to radius, ſo is the minutes of difference of longitude to the enlarged difference of latitude; whence the minutes of difference of latitude may be found: then to find the direct diſtance, ſay; as radius is to the proper difference of latitude, ſo is the ſecant of the courſe to the direct diſtance.

Caſe VI. One latitude, courſe, and departure being given; to find the other latitude, diſtance ſailed, and difference of longitude.

Firſt, for the diſtance, the proportion is; as the ſine of the courſe is to the departure, ſo is radius to the direct diſtance; then, for finding the proper difference of latitude, we have this analogy, viz. as the tangent of the courſe is to the departure, ſo is radius to the proper difference of latitude: next, to find the difference of longitude, ſay; as radius is to the meridional difference of latitude, ſo is the tangent of the courſe to the minutes of difference of longitude.

Caſe VII. Both latitudes and departure being given, to find the courſe, diſtance, and difference of longitude.

Firſt, for the difference of longitude, the proportion is; as the proper difference of latitude is to the departure, ſo is the enlarged difference of latitude to the minutes of difference of longitude: next, for the courſe, it will be; as the proper difference of latitude is to the departure, ſo is radius to the tangent of the courſe: and laſtly, to find the diſtance, we have this analogy; as the ſine of the courſe is to the departure, ſo is radius to the direct diſtance.

Caſe VIII. One latitude, diſtance ſailed, and departure being given; to find the other latitude, difference of longitude, and courſe.

Firſt, for the courſe, ſay; as the diſtance is to radius, ſo is the departure to the ſine of the courſe: next, for the difference of latitude, the proportion will be; as radius to the diſtance, ſo is the co-ſine of the courſe to the difference of latitude; whence the meridionol difference of latitude may be found: laſtly, to find the difference of longitude; ſay, as the proper difference of latitude is to the departure, ſo is the enlarged or meridional difference of latitude to the minutes of difference of longitude.

In working the different problems of plain, or Mercator's ſailing, there is one univerſal axiom, to which we may refer for ſtating the proportion according to art.

Axiom. In all caſes of plain ſailing, if either of the legs (the difference of latitude or the departure) be made the radius of a circle, the other leg will be a tangent to its oppoſite angle; and the hypothenuſe, or diſtance, will be a ſecant to that ſame angle: but if the diſtance be made radius of a circle, then will the legs be ſines to their oppoſite angles. A general rule to find a ſide; the proportion muſt begin with an angle; but to find an angle, begin with a ſide.

NAVIS, *Argo navis*, or the ſhip Argo, in aſtronomy. See *Argo*.

NAUSEA, in medicine, a reaching, or propenſity and endeavour to vomit, ariſing from a loathing of food, excited by ſome viſcous humour that irritates the ſtomach. In this diſorder the patient is ſo far from deſiring aliment, that he loaths it. It either proceeds from a fault in the ſtomach, or is derived from other diſeaſes, or is a ſymptom thereof, particularly acute inflammations, aſthma, dropſy, hypochondriac paſſion, &c. or when the humours are corrupted, and the ſpirits ſuppreſſed, in malignant diſeaſes. Vomiting in this caſe is proper, or purging when that is forbid. To theſe ſhould be joined ſtrengtheners of the ſtomach, and chiefly ſtomachic balſams, made of oil and nutmegs, and diſtilled oils, and ſtomachic plaſters. Hoffman ſays, that there is nothing better than mint, its ſpirituous water, and diſtilled oil; likewiſe maſtic and its ſpirit, or balſam of Peru diſtilled with ſalt of tartar. In acute fevers, eſpecially the malignant, epidemic, and ſpotted, there is generally a nauſea and reaching to vomit, for which reaſon emetics are good: likewiſe in the dyſentery, eſpecially when it is epidemic in a camp, emetics are not only uſeful but neceſſary, with a ſlender diet.

NAUTICAL PLANISPHERE, a deſcription of the terreſtrial globe upon a plane, for the uſe of mariners, called alſo chart. See *Chart*.

NAUTILUS, in natural hiſtory, a ſimple ſhell, having no hinge, formed of one continued piece, rolled as it were into a ſpiral form, and having its cavity divided into a great number of cells by tranſverſe partitions, each of which has a perforation, and is continuous to the others, by means of a ſyphunculus carried the whole length of the ſhell. The animal inhabiting this ſhell is a ſepia.

Of the nautili, ſome are thick and ſtrong, others thin, light, and brittle; ſome are aurated, others are not ſo; and ſome are ſmooth on the external ſurface, and others furrowed.

NAVY, the fleet or ſhipping of a prince or ſtate. See *Fleet*.

* NAYLOR (JAMES), a remarkable enthuſiaſt, among the people called Quakers, was born of reputable parents at Ardeſloe, near Wakefield, in Yorkſhire, about the year 1616, and was educated amongſt the Independents: he married at the age of twenty-two, and ſettled at Wakefield; but on the breaking out of the civil wars, in 1641, he entered as a common ſoldier in the parliament army, under lord Fairfax, and was afterwards a quarter-maſter in a troop of horſe, under General Lambert; but being taken ill in Scotland, in 1649, he left that ſervice, and returned home. In 1651, having heard the doctrine of the Quakers preached by the famous George Fox, he was converted to their principles, and ſoon diſtinguiſhed as an eminent preacher among them. He was zealous in the exerciſe of his function, and well approved by his brethren for ſome time; but being very eloquent as a preacher, he made ſuch an impreſſion on the minds of a few weak people, (principally women) who profeſſed to be of the ſame ſociety, that they began to conſider him as more than human, and to pay him a ſort of adoration; inſomuch that in ſome letters they wrote to him, they ſtiled him, “the everlaſting ſon of righteouſneſs, the prince of peace, the only begotten ſon of God, the faireſt of ten thouſands, &c.” It is alſo ſaid they kneeled before him in Exeter priſon, (to which, as the perſecution was hot againſt the Quakers, he was committed) and to have kiſſed his feet, in acknowledgment of his divinity. Theſe inſtances of fanaticiſm he did not reject, from a deluded imagination, that as, according to his faith, the ſpirit of Chriſt dwelled in all men, he had no authority to refuſe any tribute of reverence which they were induced to pay. This extravagant notion procured him the cenſure of his brethren, who declared him no longer a member of their community; and as he ſoon grew more enthuſiaſtical, in a ſhort time ſubjected him to ſevere puniſhment; for being diſcharged from Exeter priſon in the courſe of the ſame year, he ſuffered himſelf to be conducted into Briſtol, on horſe-back, in a kind of religious triumph, reſembling the manner of our Saviour's entrance into Jeruſalem: a man went uncovered before him; a woman led his horſe, whilſt ſeveral others ſpreading their handkerchiefs and ſcarfs, exclaimed, “Holy! holy! holy! is the Lord God of Hoſts!—Hoſannah to the Higheſt!—Holy! holy! holy is the Lord God of Iſrael!” In conſequence of this frantic conduct, they were all immediately committed to priſon, from whence Naylor was ſoon after removed to London, and tried by the parliament for blaſphemy. The trial laſted ſeveral days; but being at laſt convicted, he was ſentenced to ſtand twice in the pillory; once in Palace-yard, Weſtminſter, and once at the Old Exchange, London, wearing at each place an inſcription of his crimes; to be once whipped through the ſtreets, from Weſtminſter to the Old Exchange, by the common hangman; to have his tongue bored through, at the laſt mentioned place, with a hot iron, and his forehead branded with the letter B. afterwards to be ſent to Briſtol, and conveyed through the city on a horſe, with his face backward; to be there publickly whipped on a market-day, and then committed cloſe priſoner to Bridewell, in London, during the pleaſure of parliament. Many humane people, inclined to pity him as an enthuſiaſt, than to ſee him puniſhed as a blaſphemer, preſented petitions to parliament for a mitigation of the ſeverity of this ſentence, but without ſucceſs. His puniſhment was inflicted with the greateſt ſeverity, and borne with amazing patience and reſignation: and when diſcharged from Bridewell, he went to Briſtol, where, in a meeting of his friends, he made a public recantation, in ſo affecting a manner, that they were moſtly convinced of the ſincerity of his repentance, and became reconciled to him. It having been alſo reported of this extraordinary man, that he was guilty of adultery with thoſe women before-mentioned, whilſt he was under confinement, we think it incumbent upon us, as impartial biographers, to inſert his own declaration, which he gave out in writing, concerning it.---“As to that accuſation, as if I had committed adultery, with ſome of thoſe women who came with us from Exeter priſon, and alſo thoſe who were with me at Briſtol the night before I ſuffered there; of both which accuſations I am clear before God, who kept me at that day, both in thought and deed, as to all women, as a little child.”---During the ſhort time he lived afterwards, he bore the reproach of his former conduct with becoming patience,

evincing to the world, by his ſeriouſneſs and humility, a rectified judgment and Chriſtian diſpoſition. But being on a journey from London to Wakefield, in 1660, he was taken ill, and died at the houſe of a friend, near King's-Rippon, in Huntingdonſhire, in the forty-fourth year of his age. He wrote ſeveral books and papers, in vindication of himſelf from the unjuſt accuſations of his adverſaries, and alſo in ſupport of the principles of the Quakers.

* NAZARETH, an ancient city of Paleſtine, in Aſia, famous for its being the place of abode of Jeſus Chriſt, in the former part of his life. It is now only a ſmall village, ſeated on the ſide of a mountain, and ſurrounded by other ſmall ones. The monks of the order of St. Francis have a convent here. Long. 35. 40. E. Lat. 32. 30. N.

NEALING, or ANNEALING, a term uſed for the preparing of ſeveral matters, by heating or baking them in an oven, or the like.

NEALING *of glaſs*. See *Glaſs*.

NEALING *of ſteel*. See *Steel, Tempering*, &c.

NEAT, or NET-WEIGHT, the weight of a commodity alone, clear of the caſk, bag, caſe, or even filth. See *Weight*.

NEBULY, or NEBULEE, in heraldry, is when a coat is charged with ſeveral little figures in form of words, running within one another, or when the outline of a bordure, ordinary, &c. is indented or waved.

NECESSARY, in a philoſophical ſenſe, that which muſt be, or cannot be otherwiſe.

NECESSITY, whatever is done by a neceſſary cauſe, or a power that is irreſiſtible, in which ſenſe it ſtands oppoſed to freedom.

NECK, *collum*, in anatomy, that ſlender part ſituated between the head and the trunk of the body. The neck conſiſts of the following parts: 1. the common integuments; 2. ſeven vertebræ; 3. a number of muſcles which ſerve to move the head, the neck, the larynx, the pharynx, and the os hyoides; 4. a number of very large arteries, as the carotids, internal and external, and the vertebral ones; 5. of large veins, as the jugular, internal and external, and the vertebral ones; 6. of large nerves, of the par vagum, the intercoſtals, the recurrent, the diaphragmatics, and the vertebral; 7. a part of the ſpinal marrow; 8. the aſpera arteria, or trachea, particularly the larynx, in which is an eminence called the pomum adami; 9. the pharynx, with a part of the oeſophagus; 10. the thyroide, with ſome other ſmaller glands.

Luxation of the NECK. If life remain after ſuch an accident, the patient is to be immediately laid flat on the ground or floor; then the ſurgeon, laying hold of his head, is to extend it ſtrongly, gently moving it from ſide to ſide, till he finds the neck is reſtored to its natural poſture. Mr. Petit mentions another method, by means of ſlings; but Heiſter gives the preference to the former method, as being more ſimple, and becauſe the patient can be relieved much ſooner.

NECTAR, *νεκταρ*, among ancient poets, the drink of the fabulous deities of the heathens, in contradiſtinction from their ſolid food, which was called ambroſia. This word is alſo uſed by ſome of the ancients to expreſs honey.

NECTARINE, a fruit differing from the common peach, of which it is a ſpecies, in having a ſmoother rind and a firmer pulp.

NEEDLE, *acus*, a common little inſtrument or utenſil, made of ſteel, pointed at one end, and pierced at the other, uſed in ſewing, embroidery, tapeſtry, &c. Needles make a very conſiderable article in commerce, though there is ſcarce any commodity cheaper, the conſumption of them being almoſt incredible. The ſizes are from N° 1 the largeſt, to N° 25, the ſmalleſt. In the manufacture of needles, German and Hungarian ſteel are of moſt repute.

Magnetic NEEDLE, in navigation, a needle touched with a load ſtone, and ſuſtained on a pivot or center, on which playing at liberty, it directs itſelf to certain points in or under the horizon; whence the magnetical needle is of two kinds, viz. horizontal and inclinatory. See *Magnet*.

NEGATION, in logic, an act of the mind, affirming one thing to be different from another; as, that the ſoul is not matter.

NEGATIVE, in general, ſomething that implies a negation: thus we ſay negative quantities, negative ſigns, negative powers, &c. Our words and ideas, ſays Dr. Watts, are ſo unhappily linked together, that we can never know which are poſitive, which negative ideas, by the words that expreſs them; for ſome poſitive terms denote a negative idea, as, dead: and there are both poſſitive and negative terms invented to ſignify the ſame and contrary ideas, as, unhappy and miſerable. To this may be alſo added, that ſome words, which are nagative in the original language, ſeem poſſitive in Engliſh, as, *abyſs*. The way therefore to know whether any idea be negative or not, is to conſider whether it primarily implies the abſence of any poſſitive being, or mode of being; if ſo, then it is a negative idea, otherwiſe a poſſitive one.

According to logicians, the only way to prove a negative, is by converting it into an affirmative.

NEGROES, properly the inhabitants of Negritia, in Affrica; alſo called blacks and moors; but this name is now given to all blacks. The origin of the Negroes, and the cauſe of this remarkable difference from the reſt of the human ſpecies, has much perplexed the naturaliſts: Mr. Boyle ſays it cannot be produced by the heat of the climate; for though the heat of the ſun may darken the colour of the ſkin, yet experience does not ſhew that it is ſufficient to produce a true blackneſs, like that of the Negroes. Even in Affrica, many nations of Ethiopia are not black, nor were there any blacks originally in the Weſt-Indies. In many parts of Aſia under the ſame parallel with the Affrican region, inhabited by blacks, the people are but tawney. He adds, that there are Negroes in Affrica beyond the ſouthern tropic, and that a river ſometimes parts nations, one of which is black, and the other only tawney. Dr. Barriere alledges, that the gall of Negroes is black, and being mixed with their blood, is depoſited between their ſkin and ſcarfe-ſkin. However, Dr. Mitchell, of Virginia, in the Philoſophical Tranſactions, N° 476, has endeavoured by many learned arguments to prove, that the influence of the ſun in hot countries, and the manner of life of their inhabitants, are the remote cauſes of the colour of Negroes, Indians, &c. and indeed it would be a ſtrong confirmation of his doctrine if we could ſee any people, originally white become black and woolly by tranſplantation, or *vice verſa*.

NEHEMIAH, a canonical book of the Old Teſtament, ſo called from the name of its author. Nehemiah was born at Babylon during the captivity, and ſucceeded Ezra in the government of Judah and Jeruſalem. He was a Jew, and was promoted to the office of cup-bearer to Artaxerxes Longemanus, king of Perſia; when the opportunities he had of being daily in the king's preſence, together with the favour of Eſther the queen, procured him the favour of being authorized to repair and fortify the city of Jeruſalem, in the ſame manner as it was before its deſtruction by the Babylonians. On his going to Jeruſalem, he finiſhed the rebuilding of the walls in fifty-two days, and dedicated the gates of the city with great ſolemnity. He then reformed ſome abuſes which had crept in among his countrymen, particularly the extortion of the uſurers, by which the poor were ſo oppreſſed as to be forced to ſell their lands and children for ſupport. After which he returned to Perſia, and came back again with a new commiſſion, by virtue of which he regulated every thing relating both to the ſtate and religion of the Jews. The hiſtory of theſe tranſactions is the ſubject of this book.

* NEMESIS, in Pagan worſhip, the daughter of Jupiter and neceſſity, or, according to others of Oceanus and Nox; ſhe had the care of revenging the crimes which Human Juſtice left unpuniſhed. She was likewiſe called Adraſtea, becauſe Adraſtus, king of Argos, firſt raiſed an altar to her; and Rhamnuſia, from her having a magnificent temple at Rhamnus in Attica. She had likewiſe a temple at Rome in the Capitol. She is repreſented with a ſtern countenance, holding a whip in one hand, and a pair of ſcales in the other.

NEMINE CONTRADICENTE, *none contradicting it*, a term chiefly uſed in parliament, &c when any thing is carried without oppoſition.

NENIA, or NÆNIA, in antient poetry, a mournful kind of ſong, filled with the praiſes of ſome deceaſed perſon, and ſung during the celebration of the funeral.

* NÆNIA, in pagan worſhip, a goddeſs ſuppoſed to preſide over the melancholy performances ſung at funerals, in honour of the dead, to flutes and other inſtruments, by women who are hired for that purpoſe. Theſe funeral ſongs, ſays Horace, were firſt invented by Simonides, a Greek lyric poet, and called Næniæ, from the name of the goddeſs who preſided over them. The flutes at the funerals of both Greeks and Romans, were not only uſed to accompany the voice of thoſe who ſung the Næniæ, but to point out the exact time when the aſſiſtants were to ſtrike their breaſts, in token of their ſorrow, which was to be performed in cadence with the muſic.

NEPENTHES, νηϖενθης, a medecine mentioned by Homer, as moſt efficacious againſt grief and ſorrow. He ſays, that whoſoever ſhould take it mixed with wine, could not be ſenſible of grief for that whole day, though his father or mother were to die.

NEPER'S Rods, or Bones, an inſtrument invented by J. Neper, baron of Merchiſton, in Scotland, whereby the multiplication and diviſion of large numbers are much facilitated.

As to the conſtruction of Neper's Rod: ſuppoſe the common table of multiplication to be made upon a plate of metal, ivory, or paſte-board, and then conceive the ſeveral columns (ſtanding downwards from the digits on the head) to be cut aſunder; and theſe are what we call Neper's rods for multiplication. But then there muſt be a good number of each; for as many times as any figure is in the multiplicand, ſo many rods of that ſpecies (*i. e.* with that figure on the top of it) muſt we have; though ſix rods of each ſpecies will be ſufficient for any example in common affairs: there muſt be alſo as many rods of o's.

But before we explain the way of uſing theſe rods, there is another thing to be known. viz. that the figures on every rod are written in an order different from that in the table. Thus the little ſquare ſpace or diviſion in which the ſeveral products of every column are written, is divided into two parts by a line acroſs from the upper angle on the right to the lower on the left; and if the product is a digit, it is ſet in the lower diviſion; if it has two places, the firſt is ſet in the lower, and the ſecond in the upper diviſion; but the ſpaces on the top are not divided. Alſo there is a rod of the digits, not divided, which is called the index rod, and of this we need but one ſingle rod.

Multiplication by Neper's Rods: firſt lay down the index rod; then on the right ſide of it ſet a rod, whoſe top is the figure in the higheſt place of the multiplicand: next to this again, ſet the rod whoſe top is the next figure of the multiplicand; and ſo on in order, to the firſt figure. Then is your multiplicand tabulated for all the nine digits; for the ſame line of ſquares ſtanding againſt every figure of the index rod, you have the product of that figure, and therefore you have no more to do but to transfer the products and ſum them. But in taking out theſe products from the rods, the order in which the figures ſtand, obliges you to a very eaſy and ſmall addition: thus, begin to take out the figure in the lower part, or unit's place, of the ſquare of the firſt rod on the right; add the figure on the upper part of this rod to that in the lower part of the next, and ſo on, which may be done as faſt as you can look on them.

Diviſion of Neper's Rods: firſt tabulate your diviſor; then you have it multiplied by all the digits, out of which you may chooſe ſuch convenient diviſors as will be next leſs to the figures in the dividend, and write the index anſwering in the quotient, and ſo continually till the work is done.

NEPHEW, a term relative to unkle and aunt, ſignifying a brother or ſiſter's ſon, who, according to the civil law, is in the third degree of conſanguinity; but according to the canon in the ſecond.

NEPHRITIC, ſomething relating to the kidneys. See *Kidney*.

NEPHRITIC Wood, *Lignum Nephriticum*, an American wood, brought to us in large compact ponderous pieces, without knots; the outer part is of a whitiſh or pale yellowiſh colour; the medullary ſubſtance of a dark browniſh or reddiſh.

This wood ſtands greatly recommended in difficulties of urine, nephritic complaints, and all diſorders of the kidneys, and urinary paſſages; and it is ſaid to have this peculiar advantage, that it does not, like the warmer diuretics, heat or offend the parts. The blue aqueous tincture is directed to be uſed as common drink, and freſh water to be poured on the remaining wood ſo long as it communicates any blueneſs. For medical purpoſes Geoffroy ſays, he has ſeen ſome inſtances of its being uſed, but without ſucceſs; and indeed what ever may be the virtues of ſtrong infuſions or extracts of the wood, the exceedingly dilute blue tincture cannot be expected to have much efficacy

NEPHRITICS, in pharmacy, medicines proper for diſeaſes of the kidneys, eſpecially the ſtone. See *Stone*.

NEPHRITIS, *Dolor Nephriticus*, or Nephritic Cholic, in medicine a painful diſeaſe, occaſioned by the ſtone or gravel in the kidneys, in which there is an inflammation. That the kidneys labour under a true inflammation, may be known from the burning pungent pain of the part where the kidneys lie; from an acute continual fever; from the ſmall quantity of urine, which is deep coloured, or, in the height of the diſorder, aqueous; the ſtupor of the adjacent leg; the pain of the groin, and contiguous teſticle; pain of the ilium; the vomiting of bile, and continual eructations.

Such an inflammation is cured, when nature is benign, and the diſeaſe favourable, firſt by reſolution; ſecondly by a copious red and thick urine, continually diſcharged before the ſeventh, or at moſt the fourteenth day of the diſeaſe; and thirdly by a copious diſcharge from the hemorrhoidal veins in the beginning of the diſorder.

The diſorder, when the inflammation is known to be preſent, is to be cured firſt by the general remedies appropriated to the cure of all inflammations, as veneſection, revulſion, and dilution; ſecondly, by mild emollient, and antiphlogiſtic decoctions, drank in large quantities.

Thirdly, this ſpecies of the diſorder is cured by clyſters, fomentations, and baths; and fourthly by mild and moiſt aliments, by reſt, by not lying too warm in bed, and eſpecially not lying on the back.

If the pains and convulſions are exceſſively violent, opiates are beneficial. The exceſſive vomiting is to be relieved by a frequent exhibition of tepid water, edulcorated with honey. Thus a nephritis ariſing from a ſtone impacted in the ureters and kidneys, may be ſafely cured.

If the diſorder be protracted, notwithſtanding the above method of cure, beyond the ſeventh day, an abſceſs is to be dreaded, the formation of which may be known from a remiſſion of the pain, ſucceeded by a pulſation, and frequently returning horror, a weight and ſtupor of the part, from fœtid, aparently ſaline, and putrified urine. We are firſt to uſe powerfully maturating and emollient medecines; then, when the urine appears purulent, we muſt exhibit diuretics, conſiſting of pure medicated waters, whey, &c. uſing at the ſame time balſamics.

If this ſuppuration ſhould continue long, the whole kidney, being conſumed, forms a kind of uſeleſs bag; and in this caſe, a tabis renalis is frequently preſent.

If a ſcirrhus be formed, there ariſes an incurable palſy, or lameneſs of the ſubjacent leg. Hence alſo are often produced a ſlow conſumption and dropſy.

If a ſmall quantity of the inflammatory matter remains in the minute follicle of the urine, it forms a kind of baſis, to which the ſabulous matter of the urine gradually adhering, forms a ſtone in the kidneys, which is by degrees augmented. A nephritis alſo ſometimes degenerates into a gangrene. *Boerhaave's Aphor.*

* NEPTUNE, in Pagan worſhip, the god of the ſea, the ſon of Saturn and Veſta or Ops, and the brother of Jupiter and Pluto. He aſſiſted Jupiter in his expeditions, who, when he arrived at the ſupreme power, aſſigned him the ſea and the iſlands for his empire. He was, however, expelled from heaven with Apollo, for conſpiring againſt Jupiter, when they were both employed by Laomedon, king of Phrygia, in building the walls of Troy, but that prince diſmiſſing Neptune without a reward, he ſent a ſea monſter to deſtroy the country, whereupon he was obliged to expoſe his daughter Heſione. He is ſaid to have been the firſt inventor of horſmanſhip and chariot racing, on which account Mithradates, king of Pontus, threw chariots drawn by four horſes into the ſea, in honour to Neptune, and the Romans inſtituted horſe-races in the circus at his feſtival: during which time no other horſes were permitted to work, and the mules were adorned with wreaths of flowers. In a conteſt with Minerva he produced a horſe by ſtriking the earth with his trident; and on another occaſion, in a trial of ſkill with Minerva and Vulcan, he produced a bull, whence that animal was ſacrificed to him. His favourite wife was Amphitrite, whom he long courted in vain, till ſending the dolphin to intercede for him, he ſucceeded, on which he rewarded the dolphin by placing him among the ſtars. He had alſo two other wives, one called Salacia, from the ſalt water, the other Venilia, from the ebbing and flowing of the tides. He had alſo many concubines, by whom he had many children. He is repreſented with black hair, with a garment of an azure or ſea-green, with his trident in his hand, and ſeated on a large ſhell, drawn by ſea-horſes, attended by the ſea-gods Palœmon, Glaucus, and Phorces, and the ſea-goddeſſes Thetis, Melita, and Panopea, and a long train of tritons, and ſea nymphs.

NEREIDS, in the Pagan theology, ſea nymphs, daughters of Nereus and Doris. Heſiod reckons up fifty of them; and Homer gives us a liſt and deſcription of thirty-nine nereids. Virgil's liſt of the nereids is ſhorter, but diverſified with pretty circumſtances, as may be ſeen, *Georg.* lib. iv. v. 336, *& ſeq.*

The nereids were eſteemed very handſome, inſomuch that Caſiope, the wife of Cepheus, king of Ethiopia, having triumphed over all the beauties of her age, and daring to vie with the Nereids, they were ſo enraged, that they ſent a prodigeous ſea-monſter into the country; and to appeaſe them, ſhe was commanded by the oracle to expoſe her daughter Andromeda, bound to a rock, to be devoured by the monſter. In antient monuments the Nereids are repreſented riding upon ſea-horſes, ſometimes with an entire human form, and at other times with the tail of a fiſh.

* NEREUS, in fabulous hiſtory, a marine deity, the ſon of Oceanus and Thetis. He ſettled in the Ægean ſea, he was conſidered as a prophet, and had the power of aſſuming what form he pleaſed. He married his ſiſter Doris, by whom he had fifty daughters called the Nereids, who conſtantly attended on Neptune.

* NERO DOMITIUS, emperor of Rome, the ſon of Caius Domitius Ænobarbus and Agrippina, the daughter of Germanicus, was adopted by the emperor Claudius in the year 50, and ſucceeded him in 54, to the prejudice of Britannicus, the ſon of Claudius and Meſſalina, who by birthright had the next claim to the empire. At the beginning of his reign he promiſed to follow the example of Auguſtus, and made himſelf beloved by his liberality and clemency. One day, when the ſentence of a perſon condemned to death was preſented to him to be ſigned, he cried, "I heartily wiſh I could not write;" and as the ſenate returned him thanks for his juſt adminiſtration, he replied, "It will be time enough for thanking me when I have deſerved it." In ſhort the whole empire reſounded with his praiſes ſo long as he followed the wiſe advice of Burrhus and Seneca, one of whom had been his governor and the other his preceptor. But after he had reigned five years, he abandoned himſelf to the moſt ſhameful exceſſes, and the moſt extravagant crimes. He placed himſelf on the throne in a female habit, and committed the moſt abominable kind of lewdneſs, particularly with Sporus, whom he kept in his houſe dreſſed like a woman, on which it was ſaid by way of raillery, that "it would have "been happy for the world if his father "Domitius had had ſuch a wife." He poiſoned Britannicus; murdered his mother and his wife Octavia, and killed with a kick Poppæa, whom he had married, and who was pregnant. Seneca was by his order bled to death. This inhuman prince often wiſhed the whole human race had but one head, that he might have the pleaſure of cutting it off. In the year 64 he ſet the city of Rome on fire, in order to have the honour of rebuilding it, and giving it his name. While it was burning he mounted upon a tower, dreſſed like a comedian, and there ſung a poem on the ruin of Troy. He afterwards accuſed the Chriſtians of burning that city, publiſhed cruel edicts againſt them, and began the firſt perſecution of the church. In the year 66 he took a journey into Achaia, and reſolved the following year to cut through the iſthmus of Corinth, which failed of ſucceſs from the great ſums he ſquandered in ſuperfluous expences. He commonly laid ten thouſand crowns on one caſt of the dice, and uſed to angle with a golden rod and a ſcarlet line. His deteſtable conduct rendered him the abhorrence of mankind. The Roman army in Gaul refuſed to ſerve him, and Galba revolted againſt him in Spain; at which news Nero fell into deſpair, and finding he was abandoned by every body, cried in a rage, "Have I then neither friends nor enemies?" He afterwards eſcaped in diſguiſe, but fearing leſt he ſhould be taken by thoſe who purſued him, put an end to his life by his own hand, on the 9th of June, 68, at the age of thirty-two, after a reign of thirteen years and eight months, wanting only two days. He was ſucceeded by Galba.

NERVES, *nervi*, in anatomy, cylindrical whitiſh parts, uſually fibroſe in their ſtructure, or compoſed of cluſtures of fillaments, ariſing from the brain, or rather from its medulla oblongata within the ſcull, and from the ſpinal marrow, and running from thence to every part of the body.

The great uſe of the nerves, though we are not able perfectly to demonſtrate it, ſeems to be to convey to all parts of the body a fluid of an extremely ſubtle kind, ſecreted in the brain and ſpinal marrow, and deſtined for no leſs noble a purpoſe than the ſenſation, motion, and nutrition of the ſeveral parts of the whole human fabric. Thoſe who would enter farther into this ſubject, may conſult Heiſter's Anatomy; Boerhaave's Chapter on the Brain, in his Inſtitutes; Morgagni's Advarſar, where he treats it judiciouſly and deeply; and after theſe, Burggrave on the Exiſtance of the Animal Spirits. See *Brain.*

Origin, Diſtribution, and Names of the NERVES. The Nerves are uſually divided into two kinds, thoſe which ariſe from the brain, and thoſe ariſing from the ſpinal marrow.

* NETHERLANDS, a country of Europe, anciently called Belgic Gaul, which then comprehended the whole extent of land between France, Germany, and the ocean. It was called the Netherlands from its being near the ſea, where ſeveral rivers fall into it. The Netherlands antiently belonged to the Duke of Burgundy; but came at length to Maximilian, archduke of Auſtria, by his marrying the heireſs of the laſt duke of Burgundy, to whom they belonged. After which, the emperor Charles V. their grandſon, becoming king of Spain, reunited them to that kingdom. Philip II. his ſucceſſor, being deſirous of eſtabliſhing the inquiſition there; and the duke of Alba, who was their governor, treating the people with much ſeverity, they revolted, and were ſupported by William of Naſſau, prince of Orange. Nevertheleſs the duke of Parma conquered nine of theſe provinces out of ſeventeen; but the emperor having taken ſome part of theſe, the reſt were ceded to him by the treaty of Utretch. Theſe provinces had the name of the Spaniſh Netherlands, to diſtinguiſh them from the ſtates of Holland, and the French Netherlands. Flanders is a particular province of the Auſtrian Netherlands, and has given its name to the other eight, whoſe inhabitants are called Flemings. This country is plentiful in corn and paſtures, but produces no wine. The cities are very numerous, populous, and almoſt all fortified; being frequently harraſſed by war. The principal rivers are the Maeſe, the Scheld, the Lys, the Scarpe, the Dylle, and the Samber. They have made two canals, for the more eaſy tranſportation of merchandize, one of which begins at the harbour of Oſtend, paſſes to Bruges, and then goes to Ghent, where the Lys and Scheld unite. The other is that at Bruſſels, and paſſes to Antwarp. Of the nine provinces of the Auſtrian Netherlands, three lie to the E. namely, the dutchies of Brabant, Limburg, and Luxemburg. The counties of Flanders and Artoiſe are to the W. but this laſt has belonged to France a long while. The counties of Hainault and Namur are to the S. and the three dutchies and the four counties, the marquiſate of the holy empire, and the lordſhip of Mechlin, are to the N. Artoiſe, part of Flanders, Hainault, and the Cambreſis, are in the poſſeſſion of the French, and are called the French Netherlands. Likewiſe the Dutch are in poſſeſſion of the N. part of Brabant and Flanders, which are therefore called Dutch Brabant, and Dutch Flanders.

The United Netherlands lie to the N. of the former, and are bounded by Lower Germany on the E. by the Auſtrian Netherlands on the S. and on the weſt and North by the ocean. The name of the United Provinces proceeds from a treaty made at Utrecht in 1579, for their mutual defence againſt the king of Spain, ſince which time they have thrown off his yoke, and at the treaty of Munſter, in 1648, the king of Spain was obliged to acknowledge them a free and independent people; and this country is called Holland, after their moſt conſiderable province. The number of theſe provinces is uſually ſaid to be ſeven, though they are in reality eight; for two of them, namely, Guelderland and Zutphen, have but one voice in the aſſembly of the States-General. Theſe eight form one dutchy, three counties or earldoms, and four lordſhips, whoſe names are as follows, according to the priority of their voices: the duchy of Guelderland the county of Zutphen, which with the former makes one province; the county of Holland, that of Zealand, the lordſhips of Utrecht, of Frieſeland, of Over-Yſſel, and Groningen. Each of theſe eight provinces, which compoſe what are called the States-General, is a ſovereign ſtate, and is governed according to its own laws and cuſtoms. Even every city, though under its province in many things, enjoys a ſupreme power in all the reſt, and has a council or particular ſenate. The deputies of the city have each their voice, and the nobles of every province have but one altogether. All the deputies form three aſſemblies, which are always held at the Hague, namley, the ſtates-general, the council of ſtate, and the board of accounts. The Aſſembly of the ſtates-general has the principal direction of affairs, and give audience to foreign miniſters. The moſt important matters require the conſent of all the provinces before they can be determined; but the reſt are decided by a plurality of voices. Each province decides in its turn every week, and the miniſters ought to apply to the preſident of the province, who has the direction of affairs at that time. The council of ſtate executes the deciſions of the ſtates-general, and is compoſed of twelve deputies, two of whom are for the province of Guilderland, three for Holland, two for Zealand, one for Utrecht, two for Frieſeland, one for Over-Yſſel, and one for Groningen. Affairs of this board are determined by a plurality of voices. The board of accounts takes notice of the ſtates of finances, and is likewiſe compoſed of the deputies of the provinces.

NETTLE, *Urtica*, in botany, a genus of plants, without any flower petals: the ſeed is ſingle, and contained in the cup, which cloſes for that purpoſe. The root of the common nettle is accounted diuretic and lithontriptic: it ſerves alſo to purify the blood, and is good in ſpittings of blood, hæmorrhages, and the menſes. The ſeeds of the Roman nettle are recommended in the aſthma, and other diſorders of the lungs.

NEUTER, or NEUTER GENDER, in grammar, a ſort of gender of nouns in the learned languages, which are neither maſculine nor femenine.

NEUTRAL SALTS, in chemiſtry, a ſort of intermediate ſalts between acids and alcalies, participating of the nature of both, ſo that one does not predominate over the other. The chief of this kind among the native ſalts are common ſalt, nitre, aphronitrum, the eſſential ſalts of plants, and thoſe obtained by boiling from ſome medicinal and acidulated ſprings. Thoſe prepared by art, are the arcanum duplicatum, antimoniated nitre, Glauber's ſalts, and vitriolated tartar. Salts of a temperate and neutral nature, are not only of all others the moſt ſalutary, but alſo the ſafeſt and moſt efficacious, both for preventing and curing ſome of the diſorders incident to the human body.

NEUTRALITY, the ſtate of a perſon or thing that is neuter.

* NEWARK, ſiege of, and battle at. This battle was fought during the time of the grand rebellion, viz. 1644. Whilſt the marquis of Newcaſtle was in the North, obſerving the Scottiſh army, the lord Willoughby, of Parham, and Sir John Meldrum, with about 5000 men of the parliament-forces, laid ſiege to Newark, wherein the king had put a garriſon. As ſoon as Charles knew of this proceeding, he ſent orders to prince Rupert to endeavour to relieve the place. The prince being then at Cheſter, put himſelf immediately upon the march, and being joined by other troops, made a body of 7000 men, with whom he advanced towards Newark. Meldrum, who commanded alone at the ſiege, (the lord Willoughby being gone elſewhere) reſolved to fight the prince, and for that purpoſe drew up his forces, at a little diſtance from the town. On the 21ſt of March, there was a ſharp conflict, particularly at a bridge over which Meldrum had reſolved to retreat, in caſe of need. The bridge was vigorouſly attacked, and as bravely defended. Mean while, after the fight was over, Meldrum finding himſelf too weak to renew it the next day, reſolved to retreat over the bridge in the night: but he found the guard he had left there, had deſerted, and the bridge in poſſeſſion of the enemies. So not being able to retreat, and perceiving himſelf ſurrounded with the king's forces, Meldrum ſent a trumpet to the prince, to deſire a parley. It was agreed that the foot ſhould march away with their ſwords, colours, and drums; all the officers, with their arms, horſes, and baggage; and the troopers and dragoons, with their ſwords, horſes, and colours. But he was forced to deliver all his ordnance and ammunition, with about 3000 muſkets. The prince, after this expedition, which did him great honour, returned to Shropſhire, and from thence into Lancaſhire, to relieve the counteſs of Derby, who, for the ſpace of eighteen weeks, was beſieged in her houſe of Latham, and made a gallant defence againſt a body of 2000 parliamentarians. In a ſally, on the 6th of May, the beſieged ſlew near 300 of the beſiegers. Prince Rupert, in his way to Latham, took Stopworth in Cheſhire, and whilſt he was advancing towards Latham, the beſiegers raiſed the ſiege; and part of them, under the command of colonel Rigby, went and reinforced the garriſon of Bolton in Lancaſhire. The prince purſued them, and without giving them time to come to themſelves, took the town by ſtorm. After that he took Liverpool, alſo in Lancaſhire. The governor, colonel More, had not ſpirit to make any reſiſtance; he evacuated the town in the moſt precipitate manner: what rich moveables he could put on board the ſhips in the harbour he did; inſtead of acquitting himſelf honourably, according to the truſt repoſed in him, he minded little elſe but the preſervation of a few trinkets. Here the prince received a letter from the king, commanding him to relieve York, which was beſieged, and give the enemy battle.

* NEWBURY, battle of, fought in 1643. Prince Rupert was detached over the hills, to intercept the earl of Eſſex in his march, and amuſe him with ſkirmiſhes, until the king in perſon ſhould bring up the infantry. He performed this ſervice with ſuch expedition, that before the enemy reached Newbury, he charged and put their rear in confuſion; and, though they behaved with great conduct and reſolution, he compelled them to ſhorten their intended march, and take up their quarters at Hungerford. Next day, which was the 17th of September, the king took poſſeſſion of Newbury with his foot; ſo that Eſſex was obliged to paſs the night in the open field; and was indeed in ſuch a ſituation, that in all probability he would have found it extremely difficult to extricate himſelf had the royaliſts avoided a battle: but he was obliged to the impetuoſity of ſome young officers, who deſpiſed ſuch maxims of caution. He drew up his men in order of battle, upon Bigs-hill, within a ſhort mile of Newbury, and made ſuch a diſpoſition as became a general of his conduct and experience. The royaliſts began to ſkirmiſh in ſmall ſucceſſive parties, until they were inſenſibly engaged ſo far, that the king found it neceſſary to hazard a general action. The king's horſe charged with their uſual intrepidity, and even routed the cavalry of Eſſex; but they could make no impreſſion upon his foot, behind which the horſe rallied as often they were put in confuſion. The London-trained bands, in particular, oppoſed themſelves like a rampart againſt the efforts of the royaliſts, and managed their pikes with ſuch dexterity, that prince Rupert attacked them in vain, at the head of his choice cavalry. The battle was fought all day, with equal obſtinacy on both ſides; and night parted the combatants, before either army could claim the victory. The king recalled his troops from the field; and next morning the earl of Eſſex purſued his march towards Reading, which he reached with his cannon and baggage, after his rear had been ſeverely handled by prince Rupert, who charged it when entangled in defiles, at the head of his horſe, and 1000 muſqueteers. Though the number of men ſlain in the battle of Newbury was not very conſiderable, they ſuſtained irreparable loſs in the fate of ſome worthy noblemen, who fell in the engagement. The earl of Sunderland, a young nobleman of promiſing parts, was killed by a cannon ball. The earl of Carnavon, who had ſerved his royal maſter with ſuch courage and ability, was run through the body with a ſword, and expired in an hour after he received the wound; but the theme of univerſal lamentation was the death of the great, the good, the amiable Lucius Cary, lord viſcount Falkland, ſecretary of ſtate, the darling of the muſes, the patron of learning and merit, the mirrour of integrity, and the pattern of conſummate virtue. This excellent perſon had conſtantly oppoſed the crown in thoſe meaſures which he deemed dangerous to the liberty of the ſubject, and privileges of parliament: but, when he perceived the drift of the demagogues was to ruin the conſtitution; that the king had ſufficiently atoned for the errors of his conduct, during the firſt part of his reign, by the manifold conceſſions he had made in favour of his people, he diſclaimed their proceedings, and eſpouſed the cauſe of his ſovereign in diſtreſs: yet, he was ſo much afflicted at ſeeing his country involved in the calamities of a civil war, that he loſt his former ſerenity of temper; he became ſilent, penſive, and reſerved; and, in the midſt of his friends, the word "peace" oft broke from him with a profound ſigh. He eagerly forwarded every overture of an accommodation; and that his conduct might not ſeem the reſult of perſonal timidity, he expoſed himſelf, on all occaſions, to the moſt eminent hazard, as if he had deſpiſed life, or been enamoured of danger. When his temper firſt changed, he began to neglect the exterior ornaments of his perſon, in which he had been formerly exact and curious; but in the morning of the battle, as if he had foreſeen his fate, he beſtowed extraordinary pains upon his apparel, ſaying, the enemy ſhould not find his body in a ſlovenly condition. "I am weary of the times, (added he) and foreſee much miſery to my country; but I believe I ſhall be out of it before night." He charged in the front of lord Byron's regiment, and being ſhot in the belly, fell from his horſe; but his body was not found till next morning. This is one of the moſt finiſhed characters we find upon record; and his death the more lamentable, as he died in the 34th year of his age.

* NEWFOUNDLAND. An iſland of North America, and the firſt land that is made in ſailing into the river St. Laurance, in Canada. It is of a triangular form, 350 miles in length from N. to S. and 200 in breadth from E. to W. where

it is broadeſt. It is a much colder country than England, the ground being covered with ſnow five months in the year, though it lies in between 47 and 52 degrees of N. latitude; but it is much hotter than England in ſummer. It is a mountainous barren country, but well ſupplied with wood and water, and has ſeveral commodious bays and harbours. The fiſhing-banks on this coaſt are frequented by moſt European nations, and there are ſeldom leſs than 5 or 600 ſail of ſhips laden with cod-fiſh annually. The French had once ſome ſettlements here; but the property of this iſland was yielded to England by the treaty of Utrecht, and by the late peace. It is ſo uncomfortable a country, that not above 500 Engliſh families continue here all the year, beſides the garriſons of St. John's, Placentia, and other forts; but in the fiſhing ſeaſon, there are generally about 10,000 people more. The inhabitants receive moſt of their proviſions, cloathing, and furniture, by the ſhips which come from England.

NEW-MOON, *Neomenea*, that ſtate of the moon a little before and a little after her conjunction with the ſun.

NEWEL, in architecture, the upright poſt which a pair of winding-ſtairs turn about.

NEWT, or EFT, in zoology. See *Eft* and *Lizard*.

* NEWTON (Sir ISAAC). The moſt celebrated philoſopher and mathematician the world has produced, was born at Woolſtrope, in Lincolnſhire, March 25, 1642, and was deſcended from the elder branch of the family of Sir John Newton, baronet. His father dying young, his mother put him to the free-ſchool at Grantham, in Lincolnſhire, when he was twelve years of age, and removed him from hence ſome years after, in order to accuſtom him betimes to look into his own affairs; but finding him entirely devoted to his books, ſhe ſent him again to Grantham, and when eighteen years of age, removed him to Trinity College, Cambridge. M. de Fontanelle tells us, "that in learning mathematics he did not ſtudy Euclid, who ſeemed to him too plain and ſimple, and unworthy of taking up his time. He underſtood him almoſt before he read him, and a caſt of his eye upon the contents of his theorems, was ſufficient to make him maſter of them. He advanced at once to the geometry of Des Cartes, Kepler's Optics, &c. It is certain, that he had made his great diſcoveries in geometry, and laid the foundation of his two famous works, the Principia and the Optics, by the time he was 24 years of age." In 1664, he took the degree of bachelor of arts, and in 1668, that of maſter of arts, being elected the year before fellow of his college. He had before this time diſcovered the method of fluxions, and 1669 he was choſen profeſſor of mathematics in the univerſity of Cambridge. The ſame year, and the two following, he read a courſe of optical lectures in Latin, in the public ſchools of the univerſity. After having reviſed and enlarged his Principia, he publiſhed it firſt in 1687, in 4to. and of this work the higheſt encomiums have been made, both by Engliſhmen and foreigners, who have treated it rather as the production of a celeſtial intelligence, than that of a man. The very ſame year which this great work was publiſhed, the univerſity of Cambridge was attacked by king James II. when he was one of its moſt zealous defenders, and was accordingly nominated one of the delegates of that univerſity to the high-commiſſion court; and the next year he was choſen one of the members for the convention-parliament, in which he ſat till it was diſſolved. In 1696, Mr. Mountague, then chancellor of the exchequer, and afterwards earl of Halifax, obtained for him of the king, the office of warden of the mint, in which employment he was of ſignal ſervice, when the money was called in to be recoined. Three years after he was appointed maſter of the mint, which he enjoyed till his death. In 1699, he was elected one of the members of the Royal Academy of Sciences at Paris. In 1701, he was a ſecond time choſen member of parliament for the univerſity of Cambridge. In 1703, he was elected preſident of the Royal ſociety, and continued in the chair for 23 years, without interruption, till the day of his death. In 1704, he publiſhed, at London, in 4to. his Optics, and 1705, he was knighted by queen Anne. In the reign of king George I. he was better known at court than before. This great man had all along enjoyed a ſettled and equal ſtate of health, to the age of 80, when he began to be afflicted with an incontinence of urine. However, for the five following years, he had great intervals of eaſe, which he procured by the obſervance of a ſtrict regimen; it was then believed that he certainly had the ſtone, and when the paroxyſms were ſo violent, that large drops of ſweat ran down his face, he never

uttered the leaſt complaint, or expreſſed the ſmalleſt degree of impatience; but as ſoon as he had a moment's eaſe, would ſmile and talk with his uſual chearfulneſs. Till then he always read and wrote ſeveral hours in a day. He had the perfect uſe of all his ſenſes and underſtanding, till the day before he died, which was the 20th of March, 1726-7, in the 85th year of his age. The honours paid to the body of this great philoſopher, have been the admiration of foreigners, and have been a greater honour to the nation, who have given ſuch public teſtimonies to his merit. He lay in ſtate in the Jeruſalem chamber, at Weſtminſter, and on the 28th of March, his body was conveyed to Weſtminſter Abbey: the pall being ſupported by the lord chancellor, the dukes of Montroſs and Roxburg, and the earls of Pembroke, Suſſex, and Macclesfield. The biſhop of Rocheſter read the funeral ſervice, being attended by all the clergy of the church. The corps was interred juſt at the entrance into the choir, where a noble monument is erected to his memory. He was of a middling ſtature, and the latter part of his life ſomewhat inclined to be fat. His countenance was pleaſing, and at the ſame time venerable. He never made uſe of ſpectacles, and loſt but one tooth during his whole life. He was of a very meek diſpoſition, and had the greateſt modeſty, which he never loſt, though the whole world conſpired againſt it. He was candid and affable, and always put himſelf upon a level with his company. When decency, upon any occaſion, required expence and ſhew, he was magnificent, without grudging it, and with a very good grace; but at all other times that pomp was intirely retrenched, and the expence reſerved for acts of beneficence.

The following epitaph was written by Mr. Alexander Pope.

Nature and nature's laws lay hid in night,
God ſaid, *Let Newton be, and there was*
light.

NEWTONIAN PHILOSOPHY, the doctrine of the univerſe, and particularly of the heavenly bodies; their laws, affections, &c. as delivered by Sir Iſaac Newton. The term Newtonian philoſophy is applied very differently by different authors. Some, under this philoſophy, include all the corpuſcular philoſophy, conſidered as it now ſtands corrected and reformed by the diſcoveries and improvements made in the ſeveral parts thereof by Sir Iſaac Newton. In this ſenſe it is that Graveſande calls his Elements of Phyſics, an Introduction to the Newtonian Philoſophy; and in this ſenſe the Newtonian is the ſame with the new philoſophy, in oppoſition to the Carteſian, the Peripatetic, and the ancient corpuſcular philoſophy. Others, by Newtonian philoſophy, mean the method or order which Sir Iſaac obſerves in philoſophizing, viz. the reaſoning and drawing of concluſions directly from phænomena, excluſive of all previous hypotheſes; the beginning from ſimple principles, deducing the firſt powers and laws of nature from a few ſelect phænomena, and then applying thoſe laws, &c. to account for other things: and in this ſenſe, the Newtonian is the ſame with the experimental philoſophy. Others again, by Newtonian philoſophy, mean that wherein phyſical bodies are conſidered mathematically, and where geometry and mechanics are applied to the ſolution of phænomena; in which ſenſe, the Newtonian is the ſame with the mechanical and mathematical philoſophy. Others again, by Newtonian philoſophy, underſtand that part of the phyſical knowledge which Sir Iſaac Newton has handled, improved, and demonſtrated in his Principia. And laſtly, others, by Newtonian philoſophy, mean the new principles which Sir Iſaac has brought into philoſophy, the new ſyſtem founded thereon, and the new ſolutions of phænomena thence deduced; or that which characterizes and diſtinguiſhes his philoſophy from all others: and this is the ſenſe in which we ſhall chiefly conſider it. As to the hiſtory of this philoſophy, it was firſt made public in 1686, by the author, then a fellow of Trinity College, Cambridge; and in the year 1713, republiſhed with conſiderable improvements. Several other authors have ſince attempted to make it plainer, by ſetting aſide many of the more ſublime mathematical reſearches, and ſubſtituting either more obvious reaſonings or experiments; particularly Mr. Whiſton, in his Prelect. Phyſ. Mathem. Graveſande, in his Elem. and Inſt. and lately, by the learned Comment of Le Seur and Jacquier upon Sir Iſaac's Principia. The philoſophy itſelf is laid down chiefly in the third book of the Principia; the two preceding books being taken up in preparing the way, and laying down ſuch principles of mathematics as have the moſt relation to philoſophy: ſuch are the laws and conditions of powers; and theſe, to render them leſs dry and geometrical, the author illuſtrates by ſcholia in philoſophy, relating chiefly to the denſity and reſiſtance of bodies, the motion of light and ſounds, a vacuum, &c.

In the third book he proceeds to the philoſophy itſelf; and from the ſame principles deduces the ſtructure of the univerſe, and the powers of gravity, whereby bodies tend towards the ſun and planets; and from theſe powers, the motions of the planets and comets, the theory of the moon and tides. This book, which he calls De Mundi Syſtemate, he tells us, was firſt wrote in the popular way; but conſidering that ſuch as are unacquainted with the ſaid principlies, would not conceive the force of the conſequences, nor be induced to lay aſide their ancient prejudices; for this reaſon, and to prevent the thing from being in continual diſpute, he digeſted the ſum of that book into propoſitions, in the mathematical manner, ſo as it might only come to be read by ſuch as had firſt conſidered the principles; not that it is neceſſary a man ſhould maſter them all, many of them, even the firſt-rate mathematicians, would find a difficulty in getting over. It is enough to have read the definitions, laws of motion, and the three firſt ſections of the firſt book; after which the author himſelf directs us to paſs on to the book De Syſtemate Mundi.

The great principle on which the whole philoſophy is founded, is the power of gravity: this principle is not new; Kepler, long ago, hinted it in his Introduct. ad Mot. Martis. He even diſcovered ſome of the properties thereof, and their effects in the motions of the primary planets; but the glory of bringing it to a phyſical demonſtration, was reſerved to the Engliſh philoſopher. See *Gravitation.*

His proof of this principle from phænomena, together with the application of the ſame principle to the various other appearances of nature, or the deducing thoſe appearances from that principle, conſtitute the Newtonian ſyſtem; which, drawn in miniature, will ſtand thus:

1. The phænomena are, 1. That the ſatellites of Jupiter do, by radii drawn to the center of the planet, deſcribe areas proportional to their times; and that their periodical times are in a ſeſquiplicate ratio of their diſtances from its center; in which the obſervations of all aſtronomers agree. 2. The ſame phænomenon holds of the ſatellites of Saturn, with regard to Saturn; and of the moon, with regard to the earth. 3. The periodical times of the primary planets about the ſun, are in a ſeſquiplicate ratio of their mean diſtances from the ſun. But, 4. The primary planets do not deſcribe areas any way proportional to their periodical times about the earth; as being ſometimes ſeen ſtationary, and ſometimes retrogade, with regard thereto. See *Satellite, Period*, &c.

2. The powers whereby the ſatellites of Jupiter are conſtantly drawn out of the rectilinear courſe, and retained in their orbits, reſpect the center of Jupiter, and are reciprocally as the ſquares of their diſtances from the ſame center. The ſame holds of the ſatellites of Saturn, with regard to Saturn; of the moon, with regard to the earth; and of the primary planets, with regard to the ſun. See *Central Forces.*

3. The moon gravitates towards the earth, and by the power of that gravity is retained in her orbit: and the ſame holds of the other ſatellites with reſpect to their primary planets; and of the primaries with reſpect to the ſun.

As to the moon, the propoſition is thus proved: the moon's mean diſtance is ſixty ſemidiameters of the earth; her period, with regard to the fixed ſtars, is twenty-ſeven days, ſeven hours, forty-three minutes; and the earth's circumference 123249600 Paris feet. Now, ſuppoſing the moon to have loſt all her motion, and to be let drop to the earth, with the power which retains her in her orbit, in the ſpace of one minute ſhe will fall $15\frac{1}{12}$ Paris feet; the arch ſhe deſcribes in her mean motion, at the diſtance of 60 diameters of the earth, being the verſed ſign of $15\frac{1}{12}$ Paris feet. Hence, as the power, as it approaches the earth, increaſes in a duplicate ratio of the diſtance inverſely, ſo as at the ſurface of the earth it is 60×60 greater than at the moon; a body, falling with that force in our region, muſt, in a minute's time, deſcribe the ſpace of $60 \times 60 \; 15\frac{1}{12}$ Paris feet, and $15\frac{1}{12}$ Paris feet in the ſpace of one ſecond.

But this is the rate at which bodies fall by their gravity at the ſurface of our earth; as Huygens has demonſtrated by experiments with pendulums. Conſequently, the power whereby the moon is retained in her orbit, is the very ſame we call gravity; for if they were different, a body falling with both powers together would deſcend with double the velocity, and in a ſecond of time deſcribe $30\frac{1}{6}$ feet. See the articles *Deſcent* and *Moon*.

As to the other ſecondary planets, their phænomena, with reſpect to their primary ones, being of the ſame kind with thoſe of the moon about the earth, it is argued by analogy, they depend on the ſame cauſes; it being a rule or axiom all philoſophers agree to, that effects of the ſame kind have the ſame cauſes. Again, attraction is always mutual, that is, the re-action is equal to the action; conſequently the primary planets gravitate towards their ſecondary ones, the earth towards the moon, and the ſun towards them all. And this gravity, with regard to each ſeveral planet, is reciprocally as the ſquare of its diſtance from the center of gravity. See *Attraction*.

4. All bodies gravitate towards all the planets, and their weight towards any one planet, at equal diſtances from the center of the planet, is proportional to the quantity of matter in each. See *Weight*.

For the law of the deſcent of heavy bodies towards the earth, ſetting aſide their unequal retardation from the reſiſtance of the air, is this, that all bodies fall equal ſpaces in equal times; but the nature of gravity or weight, no doubt, is the ſame on the other planets as on the earth.

Suppoſe, e. gr. ſuch bodies raiſed to the ſurface of the moon, and together with the moon deprived at once of all progreſſive motion, and dropped towards the earth: it is ſhewn, that in equal times they will deſcribe equal ſpaces with the moon; and therefore, that their quantity of matter is to that of the moon, as their weight to its weight.

Add, that ſince Jupiter's ſatellites revolve in times that are in a ſeſquiplicate ratio of their diſtances from the center of Jupiter, and conſequently at equal diſtances from Jupiter, their accelerating gravities are equal; therefore, falling equal altitudes in equal times, they will deſcribe equal ſpaces; juſt as in heavy bodies in our earth. And the ſame argument will hold of the primary planets with regard to the ſun, and the powers whereby unequal bodies are equally accelerated, are as the bodies, that is, the weights are as the quantities of matter in the planets, and the weights of the primary and ſecondary planets towards the ſun, are as the quantities of matter in the planets and ſatellites. See *Jupiter*.

And hence are ſeveral corollaries drawn relating to the weights of bodies on the ſurface of the earth, magnetiſm, and the exiſtence of a vacuum. See *Weight* and *Magnet*.

5. Gravity extends itſelf towards all bodies, and is in proportion to the quantity of matter in each.

That all planets gravitate towards each other, has been already ſhewn; likewiſe, that the gravity towards any one, conſidered apart, is reciprocally as the ſquares of its diſtance from the center of the planet; conſequently, gravity is proportionable to the matter therein. Further, as all the parts of any planet, A, gravitate towards another planet B, and the gravity of any part is to the gravity of the whole, as the matter of the part to the matter of the whole; and re-action equal to action: the planet B will gravitate towards all the parts of the planet A; and its gravity towards any part will be to its gravity towards the whole, as the matter of the part to the matter of the whole. Hence we derive the methods of finding and comparing weights of bodies towards different planets; of finding the quantity of matter in the ſeveral planets, and their denſities; ſince the weights of equal bodies, revolving about planets, are as the diameters of their orbits directly, and as the ſquares of the periodical times inverſely; and the weights at any diſtance from the center of the planet are greater or leſs in a duplicate ratio of their diſtances inverſely: and ſince the quantities of matter in the planets are as their powers at equal diſtances from their centers: and laſtly, ſince the weights of equal and homogeneous bodies towards homogeneous ſpheres are, at the ſurfaces of the ſpheres, as the diameters of thoſe ſpheres; conſequently, the denſities of heterogeneous bodies are as the weights at the diameters of the ſpheres.

6. The common center of gravity of the ſun and all the planets is at reſt; and the ſun, though always in motion, yet never recedes far from the common center of all the planets.

For the matter in the ſun being to that in Jupiter as 1033 to 1; and Jupiter's diſtance from the ſun to the ſemidiameter of the ſun in a ratio ſomewhat bigger; the common center of gravity of Jupiter and the ſun will be a point a little without the ſun's ſurface; and by the ſame means;

means, the common center of Saturn and the ſun will be a point a little within the ſun's ſurface; and the common center of the earth, and all the planets, will be ſcarce one diameter of the ſun diſtant from the center thereof: but the center is always at reſt; therefore, though the ſun will have a motion this and that way, according to the various ſituations of the planets, yet it can never recede far from the center; ſo that the common center of gravity of the earth, ſun, and planets, may be eſteemed the center of the whole world. See the article *Planet*.

7. The planets move in ellipſes that have their foci in the center of the ſun, and deſcribe areas proportionable to their times. This we have already laid down, *à poſteriori*, as a phænomenon; and now that the principle of the heavenly motions is ſhewn, we deduce it therefrom *à priori*. Thus, ſince the weights of the planets towards the ſun are reciprocally as the ſquares of their diſtances from the center of the ſun; if the ſun were at reſt, and the other planets did not act on each other, their orbits would be elliptical, having the ſun in the common umbilicus, and would deſcribe areas proportionable to the times; but the mutual actions of the planets are very ſmall, and may be well thrown aſide. See *Orbit*.

Indeed the action of Jupiter on Saturn is of ſome conſequence; and hence, according to the different ſituation and diſtances of thoſe two planets, their orbits will be a little diſturbed. The earth's orbit too is ſenſibly diſturbed by the action of the moon; and the common center of the two deſcribes an ellipſis round the ſun placed in the umbilicus; and, with a radius drawn to the center of the ſun, deſcribes areas proportionable to the times. See *Earth*, *Orbit*, &c.

8. The aphelia and nodes of the planets are at reſt, excepting for ſome inconſiderable irregularities ariſing from the action of the revolving planets and comets. Conſequently, as the fixed ſtars retain their poſition to the aphelia and nodes, they too are at reſt. See the article *Node*, &c.

9. The axis, or polar diameter of the planets, is leſs than the equatorial diameter.

The planets, had they no diurnal rotation, would be ſpheres, as having an equal gravity on every ſide: but by this rotation the parts receding from the axis endeavour to riſe towards the equator, which, if the matter they conſiſt of be fluid, will be affected very ſenſibly. Accordingly Jupiter, whoſe denſity is found not much to exceed that of water on our globe, is obſerved by aſtronomers to be conſiderably leſs between the two poles than from the eaſt to weſt. And, on the ſame principle, unleſs our earth were higher at the equator than towards the poles, the ſea would riſe under the equator, and overflow all near it. But this figure of the earth Sir Iſaac Newton proves likewiſe *à poſteriori*, from the oſcillations of pendulums being ſlower and ſmaller in the equinoctial, than in the polar parts of the globe. See *Earth*.

10. All the moon's motions, and all the inequalities of theſe motions, follow from theſe principles, e. gr. her unequal velocity, and that of her nodes and apogee in the ſyzygies and quadratures; the differences in her eccentricity and her variation. See *Moon*.

11. From the inequalities of the lunar motions, we can deduce the ſeveral inequalities in the motions of the ſatellites.

12. From theſe principles, particularly the action of the ſun and moon upon the earth, it follows, that we muſt have tides, or that the ſea muſt ſwell and ſubſide twice every day. See *Tide*.

13. Hence, likewiſe, follows the whole theory of comets, as that they are above the region of the moon, and in the planetary ſpaces; that they ſhine by the ſun's light, reflected from them; that they move in conic ſections, whoſe umbilici are in the center of the ſun; and, by radii drawn to the ſun, deſcribe areas proportional to the times; that the orbits or trajectories are very nearly parabolas; that their bodies are ſolid, compact, &c. like thoſe of the planets, and muſt therefore acquire an immenſe heat in their perihelia; that their tails are exhalations ariſing from and encompaſſing them like atmoſpheres. See *Comet*.

Mr. Pope, in his Eſſay on Man, has the following lines:

Superior beings, when of late they ſaw
A mortal man unfold all Nature s law,
Admir'd ſuch wiſdom in a human ſhape,
And ſhew'd a Newton as we ſhew an ape.

NICHE, in architecture, a hollow ſunk into a wall, for the commodious and agreeable placing of a ſtatue. The ordinary proportion of a niche is to have two circles in height and one in width; but M. Le Clerc makes their height ſomething more, the exceſs being to compenſate for the height of the pedeſtal of the ſtatue. The hollow is ſemicircular at bottom, that is, in its plan; and at top it terminates in a kind of canopy. Niches have frequently an impoſt, and an archivolt or head band, and the canopy wrought and enriched in the manner of a ſhell. The breadth of the archivolt may be made equal to a ſixth or ſeventh part of the niche, and the height of the impoſt to a fifth or ſixth part of the ſame: and the impoſt and archivolt ought to conſiſt of ſuch mouldings as have ſome relation to the architecture of the place. Niches are ſometimes made with ruſtic-work, ſometimes with ſhell-work, and ſometimes of cradle or arbour-work. Niches are ſometimes made ſquare, but theſe want all the beauty of the others.

NICOTIANA, in botany, a plant more commonly known by the name of tobacco.

NICTITATING *Membrane*, in comparative anatomy, a thin membrane, chiefly found in the bird and fiſh-kind, which covers the eyes of theſe animals, ſheltering them from the duſt, or too much light; yet is ſo thin and pellucid, that they can ſee pretty well through it.

NIDUS, among naturaliſts, ſignifies a neſt, or proper repoſitory for the eggs of birds, inſects, &c. wherein the young of theſe animals are hatched and nurſed.

NIECE, a brother or ſiſter's daughter, which in the civil law, is reckoned the third degree of conſanguinity.

* NIGER, a large river of Africa, ſaid to have its ſource near that of the Nile. Some ſay it runs from E. to W. through the middle of Negroeland, diſcharging itſelf into the Atlantic ocean by three channels; the moſt ſoutherly of which is called Rio-Grande, that in the middle Gambia, and that on the N. Senega. But this is mere conjecture; for after ſeveral trials that have been made of the two laſt of theſe rivers, the channels have not been found deep enough to go up very far into the country, though they have failed fartheſt up the Senega

NIGHT, the part of the natural day during which the ſun is underneath the horizon; or that ſpace wherein it is duſky. See *Day*.

Night was originally divided by the Hebrews, and other eaſtern nations, into three parts, or watchings. The Romans, and afterwards the Jews from them, divided the night into four parts, or watches, the firſt of which began at ſun-ſet and laſted till nine at night, according to our way of reckoning; the ſecond laſted till midnight; the third till three in the morning; and the fourth ended at ſun-riſe. The ancient Gauls and Germans divided their time not by days but by nights; and the people of Iceland and the Arabs do the ſame at this day. The like is alſo obſerved of our Saxon anceſtors.

NIGHT MARE, in medicine, a diſeaſe called by phyſicians ephialtes and incubus.

* NILE, a large river of Egypt in Africa, which riſes in Abyſſinia, in about eight degrees N. latitude. It runs generally from S. to N. through Abyſſinia, Senna, and Nubia into Egypt in one ſtream, till it comes below Cairo to the Delta, where it divides into ſeveral branches, the two principal of which diſcharge themſelves into the Mediterranean, the one at Damietta, and the other at Roſetta. There are great rejoicings every year in Egypt, when the Nile riſes to a certain height, becauſe their future harveſt depends upon it. The inundation generally continues from the 20th of July to the beginning of November, at which time the dry land begins to appear; if it can be called dry after it has been ſo long ſoaked in the water. As ſoon as the land is fit they ſow their corn, and in April it becomes yellow and fit for reaping. When the water is let into the great canal, it is conveyed from thence into reſervoirs and ciſterns, to be diſtributed into their fields and gardens. But we ſhould have obſerved, that all the low wet places are ſowed with rice, which grows beſt in the water. This overflowing of the Nile is owing to the great rains, which fall annually between the tropics upon the high mountains of Abyſſinia, near which the ſource of the Nile is, and from which the water falls down in great torrents into that river. The Nile does not contain a great number of fiſh, perhaps becauſe there are ſo many crocodiles and other voracious animals. The water, where it is clear, is very fit for drinking.

* NINEVEH, an ancient city of Aſſyria. It was enlarged by Ninus, who ſome take to be the Nimrod of Moſes. When Jonas went to preach againſt it, he was ſaid to be three days in paſſing through it. It was a long while the capital of the Aſſyrian empire, but is now ruined, and

it is difficult to find the place where it ſtood.

* NIOBE, in fabulous hiſtory, the daughter of Tantalus, and wife of Amphion, king of Thebes. She was a princeſs of great beauty; but being the mother of ſeven ſons and ſeven daughters, ſhe had the preſumption to prefer herſelf to Latona, who had only Apollo and Diana. Latona in revenge cauſed Apollo and Diana to kill Niobe's fourteen children with their arrows, the former ſlaying the ſons, and the latter the daughters. On which Niobe being filling with the deepeſt grief, Jupiter, in compaſſion to her inceſſant tears, turned her into a ſtone.

NIPPERS, in the manege, are four teeth in the fore part of the horſe's mouth, two in the upper, and two in the lower jaw. A horſe puts them forth between the ſecond and third year.

NIPPERS is alſo an inſtrument in uſe among ſmiths and farriers, being a kind of pincers, wherewith in ſhoeing a horſe, they cut the nails before they rivet them. It is alſo uſed in taking off a ſhoe.

NIPPLES, *Papillæ*, in anatomy. See *Breaſt*.

NISI PRIUS, in law, a judicial writ lying in caſes where the jury being impannelled and returned before the juſtices of the bank, one of the parties requeſts to have ſuch a writ, for the eaſe of the country, that the trial may come before the juſtices in the ſame county on their coming thither. Theſe trials by niſi prius are intended for the eaſe of the country, by ſaving the parties, jurors, and witneſſes, the trouble of coming to Weſtminer. The purport of a writ of niſi prius is, that the ſheriff is thereby commanded to bring to Weſtminſter the men impannelled, at a certain day before the juſtices, *niſi prius juſticiarii domini regis ad aſſiſas capiendas venerint*; that is, unleſs the juſtices go before the day into ſuch a county to take aſſizes. See *Juſtices*.

NITRE, or SALTPETRRE, a neutral ſalt, formed by the coalition of the common vegetable fixed alcaline ſalt with a peculiar acid: of a ſharp, penetrating, cooling taſte: ſoluble in eight times its weight of very cold water, in leſs than thrice its weight of water temperately warm, and in one third its weight of boiling water.

The origin of nitre, or rather of the acid which makes the characteriſtic part of nitre, is unknown. Thus much only is known with certainty, that common waters, both atmoſpherical and ſubterraneous, often contain a little of this acid in combination with earthy or other bodies, ſo as to yield, by cryſtallization, on ſupplying the vegetable fixed alcali, a perfect nitre: and that when animal or vegetable ſubſtances, mixed with porous abſorbent earths, have lain expoſed to the air till they are thoroughly rotted, they are found in like manner to contain a ſmall portion of nitrous acid, ſo as to give out a little nitre to water, on being ſupplied with the proper alcaline baſis. On this foundation, ſome nitre is prepared in different parts of Europe; but the greateſt quantities are the produce of the Eaſt-Indies: the means by which it is there ſo plentifully obtained, or whether it is a natural production, have not yet, ſo far as we can learn, been revealed. Nitre, as brought into the ſhops, has generally a greater or leſs admixture of ſea-ſalt, from which it is purified, by diſſolving it in boiling water, and, after duly evaporating the filtered ſolution, ſetting it in a cold place to cryſtallize. This ſalt is one of the principal medicines of the antiphlogiſtic claſs; of general uſe in diſorders accompanied with inflammatory ſymptoms, whether chronical or acute, and as a corrector of the inflammation or irritation produced by ſtimulating drugs. Hoffmann thinks it has an advantage above the refrigerants of the acid kind, in not being liable to coagulate the animal juices; ſolutions of it mingling with or diſſolving recent thick blood, and in ſome degree preſerving it from coagulation, as well as corruption; at the ſame time changing its colour, when dark or blackiſh, to a crimſon; an effect which it produces alſo, in a leſs degree, upon the fleſhy parts of dead animals. It retards likewiſe the coagulation of milk, but ſeems, from Stahl's account, to increaſe the conſiſtence of thin ſerous humours; for he obſerves, that when uſed in gargariſms for inflammations of the fauces in acute fevers, it thickens the ſalival fluid into a mucus, which keeps the parts moiſt for a conſiderable time; whereas, when nitre is not added, a dryneſs of the mouth preſently enſues. This medicine generally promotes urine, and often gives relief in ſtranguaries and heat of urine, whether ſimple, or proceeding from a venereal taint. It ſometimes looſens the belly, particularly in hot diſpoſitions: in cold phlegmatic temperaments it rarely has this effect, though given in very large doſes, even to an ounce: the diarrhæas of accute diſeaſes, and fluxes in other circumſtances, from an acrimony of the bile or inflammation of the inteſtines, have been frequently reſtrained by it. In high fevers it often promotes a diaphoreſis or ſweat; in malignant fevers, where the pulſe is low, and the ſtrength greatly depreſſed, it impedes that ſalutary excretion and the eruption of the exanthemata, in conſequence of its general power of diminiſhing inflammation and heat. It ſeems to be prejudicial in diſorders of the lungs, though ſome have ventured to preſcribe it in hemoptyſes.

The uſual doſe of nitre, among us, is from two or three grains to a ſcruple; though in many caſes it may be given with great ſafety, and to better advantage, in larger quantities.

Nitre may be commodiouſly taken in the form of troches; one part of the purified ſalt is commonly ground with three parts of fine ſugar, and the mixture made up with mucilage of gum tragacanth. In this and all other ſolid forms it is accompanied, however, with one inconvenience, being liable, eſpecially when the doſe is conſiderable, to occaſion a pain or uneaſineſs at the ſtomach, which can be prevented only by plentiful dilution. A liquid form is therefore, in general, the moſt eligible, and may be eaſily rendered grateful by a proper addition of ſugar: commonly half an ounce of nitre, and two ounces of fine ſugar, with a ſcruple of cochineal, as a colouring material, are boiled in two pints and a half of water, till half a pint is waſted, and after ſtanding to ſettle, the clear purpliſh red liquor poured off for uſe. The boiling ſerves only to haſten the ſolution, and need not be continued longer than till the ſalts are diſſolved, and a ſufficient colour extracted from the cochineal.

NOBILITY, a quality that enables and raiſes a perſon above the rank of a commoner. The origin of nobility in Europe is by ſome referred to the Goths; who, after having ſeized a part of Europe, rewarded their captains with titles of honour, to diſtinguiſh them from the common people. In Britain the term nobility is reſtrained to degrees of dignity above knighthood: but every where elſe nobility and gentility are the ſame. The Britiſh nobility conſiſts only of five degrees, viz. that of a duke, marquis, earl, viſcount, and baron, each of which ſee under their proper articles. In Britain and Ireland theſe titles are only conferred by the king, and that by patent, in virtue of which it becomes hereditary. The privaliges of the nobility are very conſiderable: they are all eſteemed the king's hereditary counſellors, and are privileged from all arreſts, unleſs for treaſon, felony, breach of peace, condemnation in parliament, and contempt of the king. They enjoy their ſeats in the houſe of peers by deſcent, and no act of parliament can paſs without their concurrence: they are the ſupreme court of judicature, and even in criminal caſes give their verdict upon their honour, without being put to their oath. In their abſence they are allowed a proxy to vote for them, and in all places of truſt are permitted to conſtitute deputies, on account of the neceſſity the law ſuppoſes them under of attending the king's perſon: but no peer is to go out of the kingdom without the king's leave, and when that is granted, he is to return with the king's writ, or forfeit goods and chattles.

NOBLE, a money of account, containing ſix ſhillings and eight pence. The noble was anciently a real coin, ſtruck in the reign of Edward III. and then called the penny of gold; but it was afterwards called a roſe-noble, from its being ſtamped with a roſe: it was current at 6 s. 8 d.

NOCTAMBULI, *Noctambulones, Somnambuli*, ſuch perſons as ariſe and walk about in their ſleep. The diſorder conſiſts in this, that the proper organs of muſcular motion are at liberty, while thoſe deſtined for ſenſation are bound up, or inactive. Certain ideas follow upon certain motions of the fibres of the brain, and certain motions of thoſe fibres upon certain ideas. By much thinking on any one thing, the fibres acquire ſome permanent ſituation, which gives a freer paſſage to the ſpirits towards a certain part of the body than ordinary. If then the animal ſpirits become too copious, too much agitated, or conſiſt of parts too ſolid, they throw themſelves into the next paſſages they find open, glide into the nerves and muſcles correſponding to theſe paſſages, and there produce the motions proper to thoſe muſcles. The bilious, melancholic, and ſanguine, are moſt ſubject to thoſe nocturnal vagaries. The remedies are all ſuch things as temper the agitation of the ſpirits and relax the fibres, as bleeding, and all coolers, either internally or externally exhibited: aperitives too have a good effect; but the beſt remedy, according to ſome, is the cold bath.

NOCTILUCA, in phyſiology, a ſpecies of phoſphorous, ſo called becauſe it ſhines in the night without any light being thrown upon it; ſuch as the phoſphorous made of urine.

NOCTURNAL, relating to the night, in contradiſtinction to diurnal.

NOCTURNAL ARCH, in aſtronomy, the arch of a circle deſcribed by the ſun, or ſtar in the night.

Semi-NOCTURNAL *arch of the Sun*, that portion of a circle he paſſes over between the lower part of our meredian, and the point wherein he ſets, or the point of the horiſon wherein he riſes.

NOCTURNAL, *Noctulabium*, an inſtrument chiefly uſed at ſea, to take the altitude or depreſſion of ſome ſtars about the pole, to find the latitude and hour of the night. Some nocturnals are hemiſpheres, or planiſpheres, on the plane of the equinoctial. Thoſe commonly in uſe among ſeamen are two; the one adapted to the polar ſtar, and the firſt of the guards of the little bear; the other to the pole ſtar, and the pointers of the great bear.

NODE, *Nodus*, in ſurgery, a tumour ariſing on the bones, and uſually proceeding from ſome venereal cauſe; being much the ſame with what is otherwiſe called exoſtoſis. See *Exoſtoſis*.

This word is more particularly applied to the tumours or protuberances ariſing on the joints of old gouty people, called alſo tophi.

Some give the denomination of nodes, to all tumours formed by a coagulation of viſcuous matter in the external parts of the body.

NODES, in aſtronomy, the two points where the orbit of a planet interſects the ecliptic.

Such are the two points C and D (plate xxxvi. fig. 1.) of which the node C. where the planet aſcends northward above the plane of the ecliptic, is called the aſcending node, or the dragon's head, and is marked thus ☊. The other node D, where the planet deſcends to the ſouth, is called the deſcending node, or the dragon's tail, marked thus ☋. And the right line D C is called the line of the nodes.

NODULE, or NODULUS, a word uſed in pharmacy, for a knot tied in a rag, and including ſome medicinal ingredients to be ſuſpended in any liquor, as beer or wine, to give it a tincture, or the like.

It ſignifies alſo a parcel of odoriferous ſimples, tied up in a piece of ſilk, for the patient to be frequently ſmelling to.

NODUS, or NODE, in dialling, a certain point or pole in the gnomon of a dial, by the ſhadow whereof, either the hour of the day in dials without furniture, or the parallels of the ſun's declination, and his place in the ecliptic, &c. in dials with furniture, are ſhewn.

NODUS is alſo uſed for a hole in the ceiling of a room, or in the window, for making of a dial on the floor, wall, or the like.

NOLI ME TANGERE, *Touch me not*, in medicine, a malignant eruption, in the face, occaſioned by a ſharp corroſive humour; thus called, either becauſe it affects thoſe who touch it, or becauſe the more it is touched, the worſe it grows, and the farther it ſpreads.

NOMADES, in antiquity, a name given to ſeveral nations or people, whoſe whole occupation was to feed their flocks, and who had no fixed place of abode, but were conſtantly ſhifting, according to the conveniences of paſturage.

NOMBRIL POINT, in heraldry, the next below the feſs-point, or the very center of the eſcutcheon.

NOMENCLATURE, *Nomenclatura*, a catalogue of ſeveral of the more uſual words in any language, with their ſignifications, compiled to facilitate the uſe of ſuch words to thoſe who are to learn the tongue: ſuch are our Latin, Greek, French, &c nomenclatures.

NOMINATION, the act of naming and appointing a perſon for ſome function, employ, or benefice.

NOMINATION, in law, the power that a perſon has of appointing a clerk to a patron of a benefice, by him to be preſented to the ordinary.

NOMINATIVE, in grammar, the firſt caſe of the nouns which are declinable.

NOMINATOR, one who preſents a perſon to an office or benefice; whence the perſon named, or preſented, is called nominee.

NON-ABILITY, in law, incapacity, or an exception taken againſt a plaintiff, in a cauſe, on ſome juſt ground, why he cannot commence a ſuit in law; as his being attainted of felony, outlawry, &c.

NON-AGE, in law, all the time a perſon continues under the age of one-and-twenty; but in a ſpecial ſenſe it is all the time a perſon is under the age of fourteen.

NON-APPEARANCE, a default in not appearing in a court of judicature. Attornies ſubſcribing warrants for appearing in court, are liable to attachment and fine for non-appearance. If a defendant does not appear, and find bail upon a *ſcire facias* and rule given, judgment may be had againſt him.

NON COMPOS MENTIS, in law, denotes a perſon's not being of ſound memory and underſtanding. Of theſe perſons there are four different kinds, an ideot, a madman, a lunatic who has lucid intervals, and a drunkard who deprives himſelf of reaſon by his own act and deed In all theſe caſes, except the laſt, one that is non compos mentis ſhall not loſe his life for felony or murder; but the drunkard has no indulgence on account of the loſs of his reaſon, for, in the eye of the law, his drunkenneſs does not extenuate but aggravate his offence.

NON-NATURALS, in medicine, ſo called, becauſe by their abuſe they become the cauſes of diſeaſes.

Phyſicians have divided the non-naturals into ſix claſſes. viz. the air, meats and drinks, ſleep and watching, motion and reſt, the paſſions of the mind, the retentions and excretions.

NON-RESIDENCE, applied particularly to ſpiritual perſons, who wilfully abſent themſelves for the ſpace of one month together, or two months at different times in the year, from their benefices; for which they are liable to penalties, by the ſtatute of non-reſidence: but biſhops, the king's chaplains, &c. are excepted.

NON-SUIT, the dropping of a ſuit or action, or a renouncing thereof by the plaintiff or defendant, which happens moſt commonly upon the diſcovery of ſome error in the plaintiff's proceedings, when the cauſe is ſo far proceeded in, that the jury is ready at the bar to deliver in their verdict. A non ſuit, it is ſaid, may be in the following caſes, viz. where a perſon brings a perſonal action, and does not proſecute it with effect; or if, upon the trial, he refuſes to ſtand a verdict, then he becomes non-ſuited; ſo where the plaintiff is not ready for trial at the calling and ſwearing of the jury, it is preſumed he does not ſtand to proceed in his cauſe, and on that account the court may call him non-ſuited. Likewiſe, on a trial, when the jury comes in to deliver their verdict, and when the plaintiff is called on to hear the ſame, in that caſe, if he does not appear after being thrice called by the crier of the court, he is non-ſuited; which non-ſuit is to be recorded by the ſecondary, by the direction of the court: but if he afterwards appears, before the non-ſuit is actually recorded, the court may take the verdict, for that is not a non-ſuit, till it be recorded, upon motion made by the counſel for this purpoſe; and then it is a part of the record, in the nature of a judgment againſt the plaintiff.

NONCONFORMISTS, the ſame with diſſenters.

NONES, *Nonæ*, in the Roman calendar, the fifth day of the months January, February, April, June, Auguſt, September, November, and December; and the ſeventh of March, July, and October. March, May, July, and October had ſix days in their nones; becauſe theſe alone, in the ancient conſtitution of the year by Numa, had thirty-one days apiece, the reſt having only twenty-nine, and February thirty; but when Cæſar reformed the year, and made other months contain thirty-one days, he did not allot them ſix days of nones.

* NORFOLK, a county of England, bounded on the N. and E. by the German Ocean; by Suffolk on the S. and by the waſtes and fens of Lincolnſhire, and the Iſle of Ely on the W. It is 50 miles in length from E. to W. and 30 in breadth from N. to S. Its ſoil in ſome places is fat, and in ſome ſandy. Towards the ſea it is level, and yields plenty of corn, and paſture. In other parts, there are woods and heaths, which maintain a great many ſheep. Its principal rivers are the Ouſe, Waveney, Yare and Thyrne. Its commodities are corn, wool, honey, and ſaffron, and its manufactures worſted ſtockings and Norwich Stuffs, and on the ſea coaſts are taken abundance of herrings. This county has ſeveral good harbours, and in general is well inhabited, there being 660 pariſh churches, one city, and 27 market towns. Norwich is the city.

* NORMANDY, a conſiderable province of France, with the title of a duchy: it is ſeparated from England by the Britiſh Channel, and is bounded on the S. by Beauſe, Perche, and Maine; on the W. by Brittany, and on the E. by Picardy

Picardy and the iſle of France. Its extent from E. to W. is 150 miles, and from N. to S. 75. This province is very fertile. They have large meadows and good paſtures, which ſerve to fatten a great number of cattle. They brag of the oxen of the territory of Auge; the veal and ſweetmeats of Roan; the ſheep and rabbits of Cabour; the fowls of Caux and Beſſin, and of their partridges with red bills The ſea yields numbers of excellent fiſh, and they make a great deal of white ſalt in ſeveral places, which they uſe to ſalt butter, of which they ſell a large quantity. There are mines of iron in ſeveral places, of which they make great guns, bombs, bullets, pots, and great quantities of iron ware. The rivers of this province are the Seine, the Eure, the Aure, the Iton, the Andelle, the Rille, the Dive, the Carantonne the Ant, the Orne, and the Drome. It is very populous, for it comprehends a great number of towns and villages.

NORROY, the title of the third of the three kings at arms.

NORTH, in coſmography, one of the four cardinal points. See *Compaſs*.

* NORTHAMPTON, the ſhire town of Northamptonſhire. It has a market on Saturdays; and 8 fairs, on February 20, for horſes, horned cattle, and toys; April 15, May 4, and Auguſt 5, are great horſe-fairs; Auguſt 26 is for all ſorts of merchandize; September 19, chiefly for cheeſe and ſheep; and November 28 and December 19, for all ſorts of cattle. It is ſeated on the river Nen, over which it has two bridges, and had walls which are now demoliſhed; as alſo a large caſtle, which is ruined likewiſe. It had ſeven churches, which are now reduced to four, and the great one, called Allhallows, ſtands in the middle of the town, and is adorned with a handſome portico. It was in a great meaſure deſtroyed by fire in 1675, but was ſoon rebuilt, with a ſpacious market-place, and is a well built handſome town, where the aſſizes and quarter ſeſſions are held; and it ſends two members to parliament. It has a good free-ſchool, two alms houſes, an infirmary, and a gaol. It is 50 miles W. of Cambridge, 30 S. E. of Coventry, 32 S. of Leiceſter, and 66 N. W. by N. of London. Long. 0. 55. W. Lat. 52. 15. N.

* NORTHAMPTON, battle near. Notwithſtanding the adherents of the houſe of York were diſpirited and diſperſed by the proclamation of a free pardon publiſhed by Henry VI. ſoon after the battle at Bloreheath in 1459, the malecontent lords ſtill entertained hopes of raiſing to the throne the duke of York; but queen Margaret who exerted herſelf to fruſtrate every attempt of that kind, kept a ſtrict eye upon all their proceedings. The famous earl of Warwick was governor of Calais, an employment ſhe reſolved to deprive him of, and therefore ſent her favourite the duke of Somerſet to ſuperſede him; but Somerſet met with ſuch a warm reception, as obliged him to land in another place, from which he marched to Guiſnes, and there he ſent out detachments to ſkirmiſh with the garriſon of Calais, by whom his men were generally repulſed to their quarters. Warwick was ſo beloved by the nation in general, that when Somerſet had landed with his troops, the ſailors ſteered the ſhips directly into the harbour of Calais. The queen being determined to wreſt the government of this fortreſs from the hands of her enemies, equipped a fleet for the aſſiſtance of Somerſet, and ordered a conſiderable body of troops to be put on board, under the command of Lord Rivers and his ſon Sir Anthony Widville. While the fleet lay in the harbour of Sandwich, waiting for a wind, the earl of Warwick having received intelligence of their deſtination, manned the ſhips which had lately deſerted to him, and embarking ſome troops with Sir John Denham, they ſailed to Sandwich, where they ſurprized Rivers, and all his officers, who were conveyed to Calais, together with their ſhips, the ſailors themſelves favouring the enterprize. Warwick being thus reinforced with ſhipping, ſailed for Ireland, in order to conſult with the duke of York, about the meaſures to be taken for another inſurrection in England, where the people eſpouſed their cauſe, and their friends expected them with impatience. The duke agreed with him in opinion, that the lords at Calais ſhould make a deſcent among their adherents, and well-wiſhers in the county of Kent, and proceed directly to the capital, which, they did not doubt, would receive them with open arms. The earl of Warwick in his return to Calais, fell in with the Engliſh fleet commanded by the duke of Exeter, who had lately ſuperſeded him in the poſt of admiral, and been ſent out to intercept him in his paſſage. But the ſailors and ſoldiers on board the duke's ſquadron refuſing to fight againſt their

old commander, he, in order to prevent a total revolt, ſailed into Dartmouth, where the greateſt part of his men deſerted for want of pay and proviſion. The queen and the miniſtry did not doubt but the interview between the duke of York and the earl of Warwick, would produce a new rebellion, which in order to weaken by anticipation, the council reſolved to ſet on foot an exact inquiſition in all the towns and counties in the kingdom, for the diſcovery and puniſhment of all the partizans of the malecontents; the earl of Wiltſhire and the lord Scales were veſted with a commiſſion to make this enquiry, and puniſh all thoſe who had carried arms for York, and his adherents, in the late rebellion, and they began to execute their powers with great ſeverity, in ſome towns which openly favoured the lords of the oppoſition. Of all the counties in England, Kent had the greateſt cauſe to dread the reſentment of the court, for it had always expreſſed a particular attachment to the duke of York, and the conduct of the inhabitants under Cade was not forgotten: believing therefore, that their ruin was inevitable, if not prevented by ſome vigorous reſolution, they ſent an intimation to the lords at Calais, aſſuring them, that if they would land in Kent, the inhabitants would receive them with open arms, and hazard their lives and fortunes in their ſervice. Sir Simon Montfort had been detached by Margaret with a body of freſh forces to guard Sandwich and other harbours that lay next the enemy, and ſhips had been equipped for convoying the duke of Somerſet to England, where his preſence was thought neceſſary by the council. But Warwick ſurprized this armament, pillaged the town of Sandwich, took Montfort, and carried the ſhips to Calais. It was during this ſhort expedition, that he became acquainted with the ſtate of affairs in England, the knowledge of which, together with the invitation of the Kentiſh men, determined him and his aſſociates to land without delay. Nothing was wanting but a ſum of money to purchaſe neceſſaries, and the earl of Warwick borrowed on his own credit eighteen thouſand pounds from the merchants of the ſtaple. Thus ſupplied, he began to make preparations, and in the mean time ſent over his uncle the lord Falconbridge to Kent, where he was joined by a great number of people belonging to that and the adjacent counties. He was ſoon followed by Warwick himſelf, with the earls of March and Saliſbury, who landed. where they were met by Thomas Bourchier archbiſhop of Canterbury, the lord Cobham, and other perſons of diſtinction. Before they ſet ſail from Cadiz, they diſperſed a manifeſto in England, aſſuring the nation, that their ſole motive for taking arms, was to deliver the people from the oppreſſion under which they groaned, and to ſecure their liberties and privileges; towards the re-eſtabliſhment of which, they ſolicited the aſſiſtance of all true-hearted Engliſhmen. They had informed the duke of York of their intended operations, and the day on which they ſet ſail for England. They brought over about fifteen hundred men, who being reinforced by four thouſand under the lord Cobham, they began their march towards London, and ſuch numbers joined them in their rout, that they entered the city in triumph, with an army of forty thouſand men devoted to their ſervice. Mean while the queen was not idle at Coventry. She had endeavoured to prevent their being received in London, by ſending thither the lord Scales with a ſtrong body of forces, but he was refuſed admittance by the mayor, even before the arrival of the malecontents, and threw himſelf into the tower, from whence he threatened to cannonade the city, ſhould the magiſtrates admit the rebels; to theſe menaces, however, they paid no regard. Margaret ſtill continued to aſſemble her forces, until her army being completed, ſhe beſtowed the joint command of it upon the dukes of Somerſet and Buckingham, though ſhe herſelf was in effect the general; and iſſued out all the orders in the name of Henry, who was there in perſon. As ſoon as the young earl of March underſtood that ſhe was advancing towards London, he left the earl of Saliſbury with good part of his troops in that capital, and marched out with the earl of Warwick, at the head of twenty five thouſand men, to attack her before her army ſhould be increaſed. The two parties met in the neighbourhood of Northampton, after the queen had paſſed a river by which they were divided. Before they proceeded to battle, the aſſociated lords ſent the biſhop of Saliſbury to the king, with a meſſage intreating his majeſty would ſuſpend his indignation, and join with them in ſome ſalutary meaſures to prevent the effuſion of Engliſh blood. This addreſs was looked upon as a mere ceremony to ſerve appearances, and being rejected as ſuch, both ſides prepared for an engagement. On the nineteenth day of July 1460, the malecontents drew up their army in order of battle, the earl of Warwick commanded the right wing, the lord Cobham conducted the left, and the earl of March took his ſtation in the center. The royal army was commanded by the dukes of Somerſet and Buckingham, the queen remained at a little diſtance, from whence ſhe could obſerve the particulars of the action, and give her directions according to the emergency of the occaſion, and Henry ſtayed in his tent waiting the event of a battle on which the fate of his crown depended. The Yorkiſts having publiſhed orders through their army to reſpect the king's perſon, and ſpare the common ſoldiers; but to give no quarters to the officers, proceeded to the attack about two o'clock in the afternoon, and the action beginning with great fury on both ſides, continued till ſeven in the evening, when the lord Grew of Ruthwin, who commanded a conſiderable part of Henry's army, ſuddenly revolted to the rebels This unexpected defection, threw the reſt of the king's forces into ſuch conſternation, that they forthwith began to give ground, and were routed with great ſlaughter. The duke of Buckingham, the earl of Shrewſbury (ſon to the famous Talbot) the lord Beaumont, and many other perſons of diſtinction were killed upon the ſpot. The queen, the prince of Wales, and the duke of Somerſet fled with ſuch precipitation, that they did not halt until they reached Durham. Henry fell into the hands of the victors, who treated him with all the exterior reſpect due to their ſovereign, and this deference in ſome meaſure conſoled him for the miſchance of the day, which would have rendered him a very great object of compaſſion, had not his natural indolence and want of ſenſibility, fortified him againſt the viciſſitudes of fortune. He was immediately conducted to Northampton, with all the marks of honour and regard, and after a ſhort ſtay in that place, repaired to London ſurrounded by a crowd of noblemen and others, who had ſo lately appeared againſt him in the field of battle. Mean time the queen who did not think herſelf ſafe at Durham, retired privately to Wales, in order to elude the ſearch of her enemies, but ſhe ſoon quitted that retreat, and with her ſon took refuge in Scotland. Immediately after the king's arrival in London, the tower ſurrendered for want of proviſions, and the lord Scales who acted as governor, attempting to go by water in diſguiſe to the ſanctuary at Weſtminſter, was diſcovered and aſſaſſinated by the watermen.

* NORTTHAMPTONSHIRE, a county of England, 51 miles in length, and 30 in breadth, bounded on the E. by Huntingdonſhire, with part of Bedfordſhire and Buckinghamſhire; on the N. by Leiceſterſhire and Rutlandſhire; on the W. by Warwickſhire, and on the S. by Oxfordſhire and Buckinghamſhire. It contains 24200 houſes, 129200 inhabitants, 136 pariſhes, 13 market-towns, and ſends nine members to parliament, two for Northampton, two for Peterborough, two for Brakley, one for Higham-Ferrers, and two for the county. The principal rivers are the Ouſe, the Nen, the Welland, the Cherwell, and the Learn. It is a healthful ſporting country, containing a great number of gentlemen's ſeats, and the ſoil is fertile in corn and graſs. The productions are much as in the other inland counties, but there is leſs waſte land, and there are three foreſts, and ſeveral parks.

* NORTHUMBERLAND, a county of England, bounded on the N. by Scotland, on the E. by the German Sea, on the S. by the county of Durham, and on the W. by Cumberland and part of Scotland. It is in the dioceſe of Durham, and is about 143 miles in circumference, containing 46 large pariſhes, and 12 market-towns, of which Newcaſtle upon Tyne is the chief. The air of this county is ſharp and piercing. They have great plenty of pit-coal in this county. It is but thinly inhabited, it being for the moſt part rough, hilly, and barren; but in ſome parts near the ſea, where it is manured with ſea-weeds, it produces tolerably well. The chief riches of this county is the pit-coal.

* NORWAY, a kingdom of the moſt weſtern part of Scandinavia, and is bounded on the N. and W. by the ocean, on the E. by Swediſh Lapland, and on the S. by the Categate ſea, which ſeparates it from Denmark. It is divided into Norway Proper, and its dependencies. The dependencies of Norway are, Iceland, and the iſle of Ferro. It is a cold barren country, and the ground is covered with ſnow for nine months in the year. It is full of woods and mountains, and produces oak-planks, deal-boards, pitch and tar, beſides iron and copper-mines. The ſummer is very

ſhort, but then they ſow and reap in ſix weeks time, and yet it does not produce corn ſufficient for the natives, and thoſe that come hither for trade. They have a very great fiſhery, and dry their cod upon the rocks, without ſalting it, which is well known by the name of ſtock-fiſh, and is ſent all over Europe. It had its own kings till the year 1387, when it was united to Denmark, and in 1525 the inhabitants embraced the Lutheran religion. It has a viceroy, who has an abſolute power, and lives at Berghen. The people are robuſt, courageous, inured to labour, and good ſailors.

* NORWICH, a city of Norfolk, and one of the largeſt in England, with three markets, on Wedneſdays, Fridays, and Saturdays; and three fairs, on the day before Good-Friday, on the Saturday before Whitſunday, and on the Saturday after, for horſes, ſheep, lambs, and petty chapmen. It is a handſome, well frequented populous city, and noted for its ſtuff manufactory called Norwich crape. It is ſeated on the river Yare, which parts it in two, over which there are ſeveral bridges. It is about a mile and a half in length, and nearly the ſame in breadth; and is ſurrounded with a wall, except on the ſide of the river, through which there are twelve gates. It has a very ſtately cathedral, beautified with a lofty ſpire ſteeple. There are upwards of 34 pariſh churches within the walls; however, ſome of them are but mean. The whole extent within the walls is not inhabited, for there are many orchards and gardens where there are no houſes. It is a county of itſelf, and is governed by a mayor, recorder, 24 aldermen, a ſteward, two ſheriffs who are juſtices of the quorum, and ſix common-councilmen. The members of parliament are elected by the freemen and freeholders. The caſtle which ſtands upon a mount within the city, is now turned into a common priſon. It is 27 miles W. by N. of Yarmouth, and 109 N. E. by N. of London. Long. 1. 25. E. Lat. 52. 40. N.

NOSE, *Naſus*, in anatomy. The external parts are the root of the noſe, the arch, the back, or ſpine of the noſe, the ſides of the noſe, the tip of the noſe, the alæ, the external nares, and the part under the ſeptum. The internal parts are the internal nares, the ſeptum narium, the circumvolutions, the conchæ ſuperiores, the conchæ inferiores, the poſterior openings of the internal nares, the ſinus frontales, ſinus maxillares, ſinus ſphænoidales, the ductus lachrymales, and ductus palatini. The firm or hard parts are moſtly bony, and the reſt cartilaginous; to theſe we may add the perioſteum and perichondrium. The ſoft parts are the integuments, muſcles, ſacculus lachrymalis, membrana pituitaria, veſſels, nerves, and hairs of the nares.

Bleeding at the NOSE. See *Hæmorrhage*.

NOTARY, *Notarius*, a perſon, uſually ſome ſcrivener, who takes notes, or frames ſhort draughts of contracts, obligations, charter-parties, or other writings. At preſent a notary public, is he who publicly atteſts deeds or writings, in order to make them authentic in another nation: but he is principally employed in buſineſs concerning merchants, as making proteſts of bills of exchange, &c. And noting a bill, is where he goes to take notice of a merchant's refuſal to accept or pay the ſame.

NOTATION, in arithmetic and algebra, the method of expreſſing numbers or quantities by ſigns or characters, appropriated for that purpoſe.

NOTE, *Nota*, is uſed for a character or abbreviature, ſerving to denote or expreſs ſomething in a little compaſs.

NOTE, in muſic, a character which marks the ſound, that is, the elevation and falling of the voice, and the ſwiftneſs and ſlowneſs of its motions. In general under notes are comprehended all the ſigns or characters uſed in muſic, though in ſtrict propriety the world only implies the marks which denote the degrees of gravity and acuteneſs to be given to each ſound.

NOTE is likewiſe uſed for a mark made in a book or writing where there occurs ſomething remarkable and worthy of particular notice: as alſo for an obſervation or explication of ſome paſſage in an author added in the margin, or at the bottom of the page, by an editor, in which ſenſe it ſtands contradiſtinguiſhed to text. The notes make the principal difference in the editions of claſſic, &c. authors. We have Virgil, Horace, Terence, &c. with Dacier's notes, Dauphin's notes, notes variorum. Shakeſpeare, with Hanmer's, Warburton's, and Johnſon's notes, &c.

NOTE is alſo a minute or ſhort writing containing ſome article of buſineſs, in which ſenſe we ſay promiſſory note, note of hand, bank note, &c.

NOTHÆ COSTÆ, in anatomy, the five loweſt ribs on each ſide. They are called baſtard or ſpurious ribs, in regard they do not join with the breaſt-bone as the other ribs do ; nor are they, like the reſt, bony, but cartilaginous.

NOTICE, in law, the making of ſomething known, which a man might be ignorant of before ; and it has divers effects in our laws ; for thereby the party giving the ſame, may reap a benefit which he otherwiſe ſhould not have had ; and by this means the perſon to whom it is given, is liable to ſome charge or action, to which without it he had not been ſubject.

NOTION, in logic, an idea or repreſentation of any thing in the mind.

* NOTTINGHAM, the chief town of Nottinghamſhire, is large, populous, and delightfully ſeated on a rock, the foot of which is waſhed by the river Lean, which at a mile diſtance falls into the Trent. It has two markets, on Wedneſdays and Saturdays ; and 4 fairs, on Friday after January 13, May 7, the Thurſday before Eaſter, for horſes and horned cattle; and October 2, 3, and 4, for the ſame, and vaſt quantities of cheeſe, &c. It contains 3 pariſhes, it has 6 meeting-houſes, with handſome ſtreets, well-built houſes, and a very ſpacious market-place. It had a ſtrong caſtle which ſtood on a ſteep rock, and on the ruins is a handſome palace belonging to the late duke of Newcaſtle. Its principal manufacture is in wove ſtockings, though they make a great deal of malt and earthen ware. Heavy goods are brought up hither from London by ſea, and thence up the Trent, and many coal-pits within 3 or 4 miles of the town, afford plenty of fuel, at little expence. It is governed by a mayor, a recorder, 6 aldermen, 2 ſheriffs, 18 common-council, 2 chamberlains, and 2 coroners, and ſends 2 members to parliament. It is 16 miles E. of Derby, and 125 N. by W. of London. Long. 1. 5. W. Lat. 52. 58. N.

* NOTTINGHAMSHIRE, a county of England, bounded on the W. by Derbyſhire and part of Yorkſhire ; on the N. by Yorkſhire ; on the S. by Leiceſterſhire, and on the E. by Lincolnſhire. It is about 110 miles in circumference, containing 168 pariſhes, and 9 market-towns. It has a wholeſome air ; but with a different ſoil ; for the S. E. part being beſt watered with rivers, is moſt fruitful in corn and graſs. The weſtern part, wherein is the foreſt of Sherwood, noted for the ſtory of Robin Hood, who reſided therein, is well ſtocked with wood, wherein is plenty of game and pit-coal. This is called the ſandy part, as the former is the clay. It is about 38 miles in length from N. to S. and 19 in breadth from E. to W. The principal rivers are the Trent and Idle.

NOVATIANS, a Chriſtian ſect which ſprang up in the third century, ſo called from Novatian, a prieſt of Rome, or Novatus, an African biſhop, who ſeparated from the communion of pope Cornelius, whom Novatian charged with a criminal lenity towards thoſe who had apoſtatized during the perſecution of Decius. He denied the church's power of remitting mortal ſins, upon the offender's repentance ; and at laſt went ſo far as to deny that the apoſtates could ever hope for pardon even from God himſelf. Novatus coming to Rome, joined with the followers of Novatian, and added to theſe rigid doctrines another, which was the unlawfulneſs of ſecond marriages, againſt which this became as ſevere as againſt apoſtates ; denying communion to ſuch as married a ſecond time after baptiſm, and treating widows who married again, as adultereſſes. The two leaders were proſcribed and declared heretics, not for excluding penitents from communion, but for denying that the church had the power of remitting ſins.

NOVEL, in matters of literature, a fictitious hiſtory of a ſeries of ſurprizing and entertaining events in common life, wherein the rules of probability are or ought to be ſtrictly preſerved ; in which it differs from a romance, where the hero and heroine is ſome prince and princeſs, and the events which lead to the cataſtrophe, are in general highly abſurd, improbable, and unnatural.

NOVEL ASSIGNMENT, in law, an aſſignment of time, place, or the like, in an action of treſpaſs, otherwiſe than it was before aſſigned.

NOVEMBER, in chronology, the eleventh month of the Julian year, conſiſting only of thirty days : it got the name of November, as being the ninth month of Romulus's year, which began with March.

NOVICE, a perſon not yet ſkilled or experienced in any art or profeſſion.

NOUN, *Nomen*, in grammar, a name or word expreſſing the thing ſpoken of, as king, queen, prince, &c. Beſides the particular name which each perſon bears, he gives himſelf another when he ſpeaks of himſelf, as I or myſelf ; the former are called nouns, and the latter pronouns.

Nouns are again divided into noun ſubſtantive, and nouns adjective. They are called ſubſtantives, when the objects they expreſs are conſidered ſimply in themſelves, as ſoul, body, &c. and adjectives, when their objects are conſidered as clothed with any qualities, as vicious ſoul, corrupt body, &c. Nouns are alſo divided into proper and appellative; nouns proper are thoſe which expreſs a particular thing or perſon, ſo as to diſtinguiſh it from all others of the ſame kind, as Ariſtotle, &c. Nouns appellative are thoſe common to ſeveral individuals of the ſame kind, as man, beaſt, fiſh, &c.

* NUBIA, a kingdom of Africa, bounded on the N. by Egypt, on the E. by the Red ſea, and on the S. by the deſart of Gorham and a part of Negroeland. It is ſeated in between 13 and 24 degrees of latitude. It is 660 miles long from S. to N. and 600 broad from W. to E. It produces a great quantity of ſugar, which is very brown, and they have gold, civet, ſanders-wood, ivory, horned cattle, camels, lions, tigers, and crocodiles. The air is very hot, and whenever the ſmall pox gets among them, it rages like a plague. There are mountains which run on each ſide of the Nile, and along the gulph of Arabia. The chief rivers are the Nile, the Nahr al Abiad, or the White River, which falls into the Nile, and the Atbara, that enters it on the E. Nubia is divided into two kingdoms, Dongola and Sennar; whereof the firſt lies on the N. and the other to the S. The chief towns in the kingdom of Dongola are Ibrim, on the S. of the Nile towards Egypt; Maſho, on the W. of the Nile; Argos, over-againſt the former on the other ſide of the Nile, Dongola, Dungala, or Dankala is the capital.

NUCIFEROUS, in botany, is applied to ſuch trees as bear nuts.

NUCLEUS, the kernel of a nut, or even any ſeed incloſed within a huſk. The term nucleus is alſo uſed for the body of a comet, otherwiſe called its head.

NUDITIES, in painting and ſculpture, thoſe parts of an human figure not covered with any drapery; or thoſe parts where the carnation appears.

NUL TIEL RECORD, in law, is what the plaintiff generally pleads on the defendant's pleading matter of record in bar of the action brought by the plaintiff.

NULLITY, in law, any thing that is null or void: thus there is a nullity of marriage, where perſons marry within the degrees, or where infants marry without conſent of their parents or guardians.

NUMBER, *Numerus*, in arithmetic, an aſſemblage of ſeveral units, or things of the ſame kind.

Broken NUMBERS are the ſame with fractions. See *Fractions*.

Cardinal NUMBERS, thoſe which expreſs the quantity of units, as 1, 2, 3, 4, &c. whereas ordinal numbers are thoſe which expreſs order, as 1ſt, 2d, 3d, &c.

Compound NUMBER, one diviſible by ſome other number beſides unity; as 12, which is diviſible by 2, 3, 4, and 6. Numbers, as 12 and 15, which have ſome common meaſure beſides unity, are ſaid to be compound numbers among themſelves.

Cubic NUMBER is the product of a ſquare number by its root: ſuch is 27, as being the product of the ſquare number 9, by its root 3. All cubic numbers whoſe root is leſs than 6, being divided by 6, the remainder is the root itſelf: thus 27 ÷ 6 leaves the remainder 3, its root; 216, the cube of 6, being divided by 6, leaves no remainder; 343 the cube of 7, leaves a remainder 1, which, added to 6, is the cube root; and 512, the cube of 8, divided by 6, leaves a remainder 2, which, added to 6, is the cube root. Hence the remainders of the diviſions of the cubes above 216, divided by 6, being added to 6, always gives the root of the cube ſo divided, till that remainder be 5, and conſequently 11, the cube-root of the number divided. But the cubic number above this being divided by 6, there remains nothing, the cube-root being 12. Thus the remainders of the higher cubes are to be added to 12, and not to 6; till you come to 18, when the remainder of the diviſion muſt be added to 18; and ſo on *ad infinitum*.

Determinate NUMBER is that referred to ſome given unit, as a ternary or three: whereas an indeterminate one is that referred to unity in general, and is called quantity.

Homogeneal NUMBERS are thoſe referred to the ſame unit; as thoſe referred to different units are termed heterogeneal.

Whole NUMBERS are otherwiſe called integers. See *Integers*.

Rational NUMBER is one commenſurable with unity; as a number, incommenſurable with unity, is termed irrational or a ſurd. See *Surd*.

In the ſame manner a rational whole number is that whereof unity is an aliquot part; a rational broken number, that equal to ſome aliquot part of unity; and a rational mixed number, that conſiſting of a whole number and a broken one.

Even NUMBER, that which may be divided into two equal parts, without any fraction, as, 6, 12, &c. The ſum, difference, and product of any number of even numbers, is always an even number.

An evenly even NUMBER, is that which may be meaſured, or divided, without any remainder, by another even number, as, 4 by 2.

An unevenly even NUMBER, when a number may be equally divided by an uneven number, as 20 by 5.

Uneven NUMBER, that which exceeds an even number, at leaſt by unity, or which cannot be divided into two equal parts, as 3, 5, &c.

The ſum or difference of two uneven numbers makes an even number; but the factum of two uneven ones makes an uneven number.

If an even number be added to an uneven one, or if the one be ſubtracted from the other, in the former caſe the ſum, in the latter the difference, is an uneven number; but the factum of an even and an uneven number is even.

The ſum of any even number of uneven numbers is an even number, and the ſum of any uneven number of uneven numbers is an uneven number.

Primitive or *Prime* NUMBERS, are thoſe only diviſable by unity, as 5, 7, &c And prime numbers among themſelves are thoſe which have no common meaſure beſides unity, as 12 and 19.

Perfect NUMBER, that whoſe aliquot parts, added together, make the whole number, as 6, 28; the aliquot parts of 6 being 3, 2, and 1 = 6; and thoſe of 28, being 14, 7, 4, 2, 1, = 28.

Imperfect NUMBERS, thoſe whoſe aliquot parts, added together, make either more or leſs than the whole. And theſe are diſtinguiſhed into abundant and defective; an inſtance in the former caſe is 12, whoſe aliquot parts 6, 4, 3, 2, 1, make 16; and in the latter caſe 16, whoſe aliquot parts, 8, 4, 2, and 1, make but 15.

Plain NUMBER, that ariſing from the multiplication of two numbers, as 6, which is the product of 3 by 2; and theſe numbers are called the ſides of the plain.

Square NUMBER, the product of any number multiplied by itſelf; thus 4, which is the factum of 2 by 2, is a ſquare number.

Every ſquare number added to its root makes an even number.

Polygonal, or *Polygonous* NUMBERS, the ſums of arithmetical progreſſions beginning with unity: theſe, where the common difference is 1, are called triangular numbers; where 2, ſquare numbers; where 3, pentagonal numbers; where 4, hexagonal numbers; where 5, heptagodal numbers, &c. See *Polygonal*.

Pyramidal NUMBERS. The ſums of poligonous numbers, collected after the ſame manner as the polygons themſelves, and not gathered out of arithmetical progreſſions, are called firſt pyramidal numbers: the ſums of the firſt pyramidals are called ſecond pyramidals, &c.

If they ariſe out of triangular numbers, they are called triangular pyramidal numbers; if out of pentagons, firſt pentagonal pyramidals.

NUMBER, in grammar, a modification of nouns, verbs, &c. to accommodate them to the varieties in their objects, conſidered with regard to number.

When a noun indicates an object conſidered as ſingle, or alone, or a number of them conſidered as united together, it is ſaid to be of the ſingular number, as a plant, an army, a church. When it indicates ſeveral objects, and thoſe as diſtinct, it is of the plural number, as plants, armies, churches: and when I ſpeak of myſelf as making a part of ſeveral others, inſtead of ſaying I, it is proper to ſay we, &c.

NUMBERS, in poetry, oratory, muſic, &c. certain meaſures, proportions, or cadences, which render a verſe, period, or ſong, agreeable to the ear.

Poetical numbers conſiſt in a certain harmony in the order, quantities, &c. of the feet and ſyllables, which make the piece muſical to the ear, and fit for ſinging, for which all the verſes of the ancients were intended.

Book of NUMBERS, the fourth book of the Pentateuch, taking its denomination from its numbering the families of Iſrael. A conſiderable part of this book is hiſtorical, relating to ſeveral remarkable paſſages in the Iſraelites march through the wilderneſs. It contains a diſtinct relation of their ſeveral movements from one place to another, or their two and forty ſtages through the wilderneſs, and many other things, whereby we are inſtructed in ſome of the weightieſt truths that have immediate reference to God and his providence in the world. But the greateſt part of this book is ſpent in enumerating thoſe laws and ordinances, whether civil or ceremonial, which were given by God, but not mentioned before in the preceding books.

NUMERAL Letters, thoſe letters of the alphabet which are uſed for figures.

NUMERALS, in grammar, thoſe words which expreſs numbers.

NUMERATION, *Numeratio*, in arithmetic, the art of eſtimating or pronouncing any number.

The characters whereby numbers are ordinarily expreſſed are the nine following, 1, 2, 3, 4, 5, 6, 7, 8, 9.

That theſe nine numerical notes may expreſs not only units, but alſo tens, hundreds, thouſands, &c. they have a local value given them; ſo that when either alone, or when placed in the right-hand place, they denote units; in the ſecond place tens; in the third, hundreds; in the fourth, thouſands, &c.

NUMERATOR *of a Fraction.* See *Fraction.*

NUMERICAL, Numerous, or Numeral, ſomething belonging to numbers.

NUMISMATOGRAPHIA, a term uſed for the deſcription and knowledge of ancient medals and coins, whether of gold, ſilver, or braſs.

NUN, a woman, in ſeveral Chriſtian countries, who devotes herſelf, in a cloiſter or nunnery, to a religious life. There were women in the ancient Chriſtian church, who made public profeſſion of virginity before the monaſtic life was known in the world, as appears from the writings of Cyprian and Tertullian. Theſe, for diſtinction's ſake, are ſometimes called eccleſiaſtical virgins, and were commonly enrolled in the canon or matricula of the church. They differed from the monaſtic virgin chiefly in this, that they lived privately in their father's houſes, whereas the others lived in communities: but their profeſſion of virginity was not ſo ſtrict as to make it criminal in them to marry afterwards, if they thought fit. As to the conſecration of virgins, it had ſome things peculiar in it: it was uſually performed publicly in the church by the biſhop. The virgin made a public profeſſion of her reſolution, and then the biſhop put upon her the accuſtomed habit of ſacred virgins. One part of this habit was a veil called the ſacrum velamen, another was a kind of mitre or coronet worn upon the head. At preſent, when a woman is to be made a nun, the habit, veil, and ring of the candidate are carried to the altar, and ſhe herſelf, accompanied by her neareſt relations, is conducted to the biſhop, who, after maſs and an anthem, the ſubject of which is "that ſhe ought to have her lamp lighted, becauſe the bridegroom is coming to meet her," pronounces the benediction: then ſhe riſes up, and the biſhop conſecrates the new habit, ſprinkling it with holy-water. When the candidate has put on her religious habit, ſhe preſents herſelf before the biſhop, and ſings on her knees, *ancilla Chriſti ſum, &c.* then ſhe receives the veil, and afterwards the ring, by which ſhe is married to Chriſt; and laſtly, the crown of virginity. When ſhe is crowned, an anathema is denounced againſt all who ſhall attempt to make her break her vows. The ſeveral orders of nuns in the Romiſh and Greek churches, are mentioned under their reſpective articles.

NUNCIO, or Nuntio, an ambaſſador from the pope to ſome Catholic prince or ſtate, or a perſon who attends on the pope's behalf at a congreſs, or an aſſembly of ſeveral ambaſſadors.

NUNCUPATIVE WILL, denotes a laſt will or teſtament, only made verbally, and not put in writing.

NUPTIAL Rites, the ceremonies attending the ſolemnization of marriage.

* NUREMBERG, a city of Germany, in the circle of Franconia, and capital of a territory of the ſame name. It is ſeated in a ſandy barren plain, yet the inhabitants are ſo induſtrious that they have rendered it a very flouriſhing place. It is about ſeven miles in circumference, and ſurrounded with high walls, flanked with 380 towers, after the old way of fortification. The river Pegnitz runs through it, and divides it in two, and turns ninety wheels belonging to mills and other machines, and has twelve bridges over it, by which both parts of the town communicate with each other. There are 130 ſtreets, which are large and well paved, and the houſes are generally built of hewn ſtone, ſix ſtories high. Though Nuremberg is ſo large a place, it has properly but two pariſh-churches, which are both built in the Gothic taſte. The arſenal is one of the beſt furniſhed of any in Germany, having arms for 10,000

men, with 300 pieces of cannon. The town-houſe is very large, with a beautiful front. The number of the inhabitants is ſaid to be 60,000, who are governed by an ariſtocracy, by whom juſtice is very impartially adminiſtered. The inhabitants are very ingenious and ſkilful in all ſorts of arts, of which their geographical maps, copper-plates, mathematical and muſical inſtruments, are a proof, as well as their works in ſteel, ivory, alabaſter, and wood. Moſt of thoſe curious toys which are brought into England, and called Dutch toys, are made at this place. Their religion is the Lutheran, and there is only one church allowed to the Roman catholics. It is ſeated almoſt in the center of Germany, 55 miles N. W. of Ratiſbon, and 250 W. by N. of Franconia. Long. 11. 12. E. Lat. 49. 41. North.

NURSERY, or Nursery Garden, a piece of land ſet apart for the raiſing and propagating of all ſorts of trees and plants to ſupply the garden and other plantations. Of this ſort there are great numbers in different parts of this kingdom, but particularly in the neighbourhood of London, which are occupied by the gardeners, whoſe buſineſs it is to raiſe trees, plants, and flowers for ſale; and in many of theſe there is at preſent a much greater variety of trees and plants cultivated than can be found in any other part of Europe. In France, their nurſeries (which are but few, when compared with thoſe in England) are chiefly confined to the propagation of fruit-trees, from whence they have the appellation of pepinier: for there is ſcarce any of thoſe gardens, where a perſon can be ſupplied either with ever-greens, flowering-ſhrubs, or foreſt-trees. And in Holland, their nurſeries are principally for flowers; ſome few of them indeed propagate tender exotic plants. But thoſe nurſeries in the neighbourhood of London, in general include all theſe; and from hence moſt of the curious perſons abroad are ſupplied with furniture for their gardens. But I do not propoſe, in this place, to treat of theſe extenſive nurſeries, or to give a deſcription of them; therefore ſhall confine myſelf to treat of ſuch nurſeries only as are abſolutely neceſſary for all lovers of planting to have upon the ſpot, where they deſign to make their plantation: for if theſe are large, the expence of carrying a great number of trees, if the diſtance is great, will be no ſmall article, beſides the hazard of their growing: which, when plants have been trained up in good land, and removed to an indifferent one, is very great. Therefore it is of the utmoſt conſequence to every planter, to begin by making of a nurſery. But in this article I muſt beg leave to obſerve, that a nurſery ſhould not be fixed to any one particular ſpot: I mean by this, that it would be wrong to continue the raiſing of trees any number of years upon the ſame ſpot of ground: becauſe hereby the ground will be ſo much exhauſted by the trees as to render it unfit for the ſame purpoſe. Therefore all good nurſery-gardeners ſhift and change their land, from time to time; for when they have drawn off the trees from a ſpot of ground, they either plant kitchen-herbs, or other things, upon the ground for a year or two, by which time, as alſo by dunging and trenching of the land, it is recovered, and made fit to receive other trees. But this they are obliged to from neceſſity, being confined to the ſame land; which is not the caſe with thoſe gentlemen who have a large extent of ground in the country. Therefore all ſuch perſons I would adviſe to make nurſeries upon the ground which is intended for planting, where a ſufficient number of the trees may be left ſtanding, after the others have been drawn out, to plant in other places; which, for all large growing trees, but particularly ſuch as are cultivated for timber, will be found by much the moſt advantageous method: for all thoſe trees which come up from the ſeed, or which are tranſplanted very young into the places where they are deſigned to remain, will make a much greater progreſs, and become larger trees than any of thoſe which are tranſplanted at a greater age. Therefore the nurſeries ſhould be thinned early, by removing all thoſe trees which are intended for other plantations, while they are young; becauſe hereby the expence and trouble of ſtaking, watering, &c. will be ſaved, and the tree will ſucceed much better. But in expoſed ſituations, where there are nurſeries made, it will be neceſſary to permit the trees to ſtand much longer, that, by growing cloſe together, they may ſhelter each other, and draw themſelves up: and theſe ſhould be thinned gradually, as the trees advance; for by taking away too many at firſt, the cold will check the growth of the remaining trees. But then thoſe trees which are taken out from theſe nurſeries, after a certain age, ſhould not be depended on for planting; and it will be prudence rather to conſign them for fuel, than by attempting to remove them large, whereby, in endeavouring to get them up with good roots, the roots of the ſtanding trees will be often much injured.

What has been here propoſed, muſt be underſtood for all large plantations in parks, woods, &c. but thoſe nurſeries which are only intended for the raiſing of ever-greens, flowering-ſhrubs, or plants which are deſigned to embelliſh gardens, may be confined to one ſpot, becauſe a ſmall compaſs of ground will be ſufficient for this purpoſe. Two or three acres of land, employed this way, will be ſufficient for the moſt extenſive deſigns; and one acre will be full enough for thoſe of moderate extent. And ſuch a ſpot of ground may be always employed for ſowing the ſeeds of foreign trees and plants; as alſo, for raiſing many ſorts of biennial and perennial flowers to tranſplant into the borders of the pleaſure-garden; and for raiſing many kinds of bulbous-rooted flowers from ſeeds, whereby a variety of new ſorts may be obtained annually, which will recompenſe for the trouble and expence, and will moreover be an agreeable diverſion to all thoſe perſons who delight in the amuſements of gardening.

Such a nurſery as this ſhould be conveniently ſituated for water; for where that is wanting, there muſt be an expence attending the carriage of water in dry weather. It ſhould alſo be as near the houſe as it can with conveniency be admitted, in order to render it eaſy to viſit at all times of the year; becauſe it is abſolutely neceſſary, that it ſhould be under the inſpection of the maſter; for unleſs he delights in it, there will be little hopes of ſucceſs. The ſoil of this nurſery ſhould alſo be good, and not too heavy and ſtiff; for ſuch land will be very improper for ſowing moſt ſorts of ſeeds; becauſe, as this will detain the moiſture in the ſpring and winter, ſo the ſeeds of moſt tender things, eſpecially of flowers, will rot in the ground, if ſown early. Therefore, where perſons are confined to ſuch land, there ſhould be a good quantity of ſand, aſhes, and other light manures buried, in order to ſeparate the parts, and pulveriſe the ground; and if it is thrown up in ridges, to receive the froſt in winter, it will be of great uſe to it; as will alſo the frequent forking or ſtirring of the ground, both before and after it is planted.

NUSANCE, in law, a thing done to the annoyance of another. Nuſances are either public or private: a public nuſance is an offence againſt the public in general, either by doing what tends to the annoyance of all the king's ſubjects, or by neglecting to do what the common good requires; in which caſe all annoyances and injuries to ſtreets, highways, bridges, and large rivers; as alſo diſorderly alehouſes, bawdy-houſes, gaming-houſes, ſtages for rope-dancers, &c. are held to be common nuſances. A private nuſance is when only one perſon or family is annoyed, by the doing of any thing; as where a perſon ſtops up the light of another's houſe, or builds in ſuch a manner that the rain falls from his houſe upon his neighbour's; as likewiſe the turning or diverting water from running to a man's houſe, mill, meadow, &c. ſtopping up a way that leads from houſes to lands; ſuffering a houſe to decay, to the damage of the next houſe; erecting a brew-houſe in any place not convenient; or an houſe of office, &c. ſo near another perſon's houſe as to offend him by its ſmell. Indictment lies for a public or common nuſance at the king's ſuit, whereon the party offending ſhall be fined and impriſoned; but no action can be brought in this caſe, except one man ſuffers more by a common nuſance than another; as where a pit is dug in the highway, and he falls into it. Action on the caſe, or aſſiſe of nuſance, lies for any private nuſance, at the ſuit of the party aggreived, and on ſuch actions judgment is given that the nuſance ſhould be removed, and the injured party recover damages; but if a perſon has only a term of years in a houſe or lands, as he has no freehold therein, he can only have an action on the caſe, by which the nuſance will be removed without his recovering damages.

NUT, *Nux*, among botaniſts, denotes a pericarpium of an extraordinary hardneſs, incloſing a kernel or ſeed. Of theſe there are ſeveral kinds, as filberts, walnuts, &c.

NUTMEG, *nux moſchata*, in natural hiſtory, the kernel of a large nut, produced by a tree ſaid to reſemble the pear-tree, growing in the Eaſt Indies. The outer part of the fruit is a ſoft fleſhy ſubſtance like that of the walnut, which ſpontaneouſly opens when ripe: under this lies a red membrane called mace, forming a kind of reticular covering, through the fiſſures of which is ſeen the hard woody ſhell that includes the nutmeg. Two ſorts of this kernel are diſtinguiſhed; one of an oblong figure, called male; the other roundiſh, or of the ſhape of an olive, called female; this laſt is the officinal ſpecies, being preferred to the other on account of its ſtronger and more agreeable flavour, and its being, as is ſaid, leſs ſubject to become carious. The nutmegs are cured, according to Rumphius, by dipping them in a ſomewhat thick mixture of lime and water, that they may be every where coated with the lime, which contributes to their preſervation.

The nutmeg is a moderately warm, grateful, unctuous ſpice; ſuppoſed to be particularly uſeful in weakneſs of appetite, and the nauſeæ and vomitings accompanying pregnancy, and in fluxes; but liable, when taken too freely, to ſit very uneaſy on the ſtomach, and, as is ſaid, to affect the head. Roaſted with a gentle heat, till it becomes eaſily friable, it proves leſs ſubject to theſe inconveniencies, and is ſuppoſed likewiſe to be more uſeful in fluxes.

Two kinds of ſebaceous matter, ſaid to be expreſſed from the nutmeg, are diſtinguſhed in the ſhops by the name of oil of mace: the beſt ſort, brought from the Eaſt Indies in ſtone jars, is ſomewhat ſoft, of a yellow colour, and of a ſtrong agreeable ſmell, greatly reſembling that of the nutmeg itſelf: the other comes from Holland in ſolid maſſes, generally flat, and of a ſquare figure, of a paler colour, and much weaker ſmell. Theſe oils are employed chiefly externally in ſtomachic plaſters, and in anodyne and nervine unguents and liniments. They appear to be a mixture of the groſs ſebaceous matter of the nutmeg with a little of the eſſential or aromatic oil; both which may be perfectly ſeparated from one another by maceration or digeſtion in rectified ſpirit, or by diſtillation with water. The ſpirituous tincture, and the diſtilled water, and the eſſential oil, are nearly ſimilar to thoſe drawn from the nutmeg itſelf, the pure white ſebaceous ſubſtance being left behind.

NUTRITION, *Nutritio*, in the animal œconomy, the acceſſion or appoſition of new parts to the body, ſimilar to thoſe it already conſiſted of, either for its augmentation, or the reparation of ſuch as are worn off.

NUX VOMICA, a flat, compreſſed, round fruit, about the breadth of a ſhilling, brought from the Eaſt Indies. It is a certain poiſon to dogs, cats, &c. and doubtleſs it would alſo prove fatal to mankind. Its ſurface is not much corrugated, and its texture is firm like horn, and of a pale, greyiſh, brown colour.

NYCHTHEMERON, νυχθημερον, the natural day, or day and night, which together always make twenty-four hours.

NYCTALOPIA, in medicine, a twofold diſorder of the eye, one of which is oppoſite to the other. In the firſt, the ſight is beſt in the night, and in obſcure places; whereas, in a clear light, their ſight fails, ſo that they can hardly ſee any thing. In the other ſort of nyctalopia, the patient can ſee nothing at all except in a clear and bright light. As theſe infirmities ariſe from a natural bad formation of the eye, they are therefore incurable.

NYCTANTHES, Arabian jeſmine, in botany, a genus of plants.

NYMPH, in mythology, an appellation given to certain inferior goddeſſes, inhabiting the mountains, woods, waters, &c. ſaid to be the daughters of Oceanus and Tethys.

NYMPH, among naturaliſts, that ſtate of winged inſects between their living in the form of a worm, and their appearing in the winged or moſt perfect ſtate.

The eggs of inſects are firſt hatched into a kind of worms, or maggots; which afterwards paſs into the nymph ſtate, ſurrounded with ſhells or caſes of their own ſkins; ſo that, in reality, theſe nymphs are only the embryo-inſects, wrapped up in this covering; from whence they at laſt get looſe, though not without great difficulty.

During the nymph ſtate, the creature loſes its motion. Swammerdam calls it nympha aurelia, or ſimply aurelia; and others give it the name of chryſalis, a term of the like import. See *Chryſalis*.

NYMPHÆ, in anatomy, two membranaceous parts, ſituated on each ſide the rima. They are of a red colour, and cavernous ſtructure, ſomewhat reſembling the wattles under a cock's throat.

They are ſometimes ſmaller, ſometimes larger, and are continuous to the præputium of the clitoris, and joined to the interior ſide of the labia.

NYMPHÆA, the water-lily, in botany, a genus of plants.

* NYMPHS, in fabulous hiſtory, terreſtrial deities, of which there were various

kinds, all of whom are ſuppoſed to be daughters of Oceanus and Tethys, and were diſtinguiſhed into Nereids, Naiades, Dryades, Hamadryades, Oreades, Limniades, &c. There were alſo celeſtial nymphs, who were the attendants of the ſuperior deities. Thoſe of both kinds were repreſented as young and beautiful virgins, and dreſſed ſuitably to the character aſcribed to them. The nymphs were probably derived from the poets perſonizing the various parts of nature, and giving a voice and features to the fountains, hills, groves, and rivers.

O.

O, The fourth vowel, and fourteenth letter of the Engliſh alphabet.

The Greeks had two *o*'s, viz. Omicron (*o*) and Omega (*ω*); the firſt pronounced upon the tip of the lips with a ſharper ſound, and the other in the middle of the mouth, with a fuller ſound, equal to *o o* in our language. The long and ſhort pronunciations of our *o* are equivalent to the two Greek ones; the firſt, as in *ſuppoſe*; the ſecond, as in *obey*.

O, among the ancients, was a numeral letter, ſignifying eleven; and when a daſh was added at the top, thus, Ō, it ſignified eleven thouſand.

OAK, a tree well known. It is one of the principal materials in building ſhips, &c. being ſtrong in all poſitions. All the ſorts of oaks, ſays Mr. Miller, are propagated from acorns, which ſhould be ſown as ſoon as poſſible after they are ripe; for if they are kept too long out of the ground, they ſeldom grow.

The manner of ſowing theſe acorns, if deſigned for a ſmall plantation, or to be removed, is to prepare ſome beds of freſh earth, neither too ſtrong and heavy, nor too light and dry: in theſe beds you ſhould place the acorns in rows one foot aſunder, and about two inches diſtance in the rows, covering them about two inches thick with the ſame freſh earth; obſerving to leave none of them uncovered, to entice the vermin, which may, in a ſhort time, deſtroy all the ſeeds.

In the ſpring, when the plants begin to appear, you muſt carefully clear them from weeds; and if the ſeaſon proves dry, you ſhould refreſh them now and then with a little water, which will greatly promote their growth. In theſe beds the plants ſhould remain until the following autumn, obſerving conſtantly to keep them clear from weeds; at which time you ſhould prepare a ſpot of good freſh earth, in ſize proportionable to the quantity of plants, which ſhould be trenched and levelled: then towards the middle or latter end of October, you ſhould carefully take up the plants, ſo as not to injure their roots, and plant them out in rows three feet aſunder, and eighteen inches diſtance plant from plant; obſerving never to ſuffer the plants to abide long out of the ground, becauſe their roots would dry, and endanger the growth of the plants.

When they are planted, you ſhould lay a little mulch upon the ſurface of the ground, near their roots, to prevent the earth from drying too faſt; and if the ſeaſon ſhould prove very dry, you ſhould give them a little water to ſettle the earth to their roots.

When the plants have taken root in this nurſery, they will require little more care than to keep them clear from weeds, and dig the ground between the rows every ſpring; in doing of which, you ſhould cut off ſuch roots as extend very far from the trunk of the trees, which will render them better for tranſplanting again: you ſhould alſo prune off ſuch ſide branches as extend themſelves very far, and would retard the upright ſhoot; but you ſhould by no means cut off all the ſmall lateral branches, ſome of which are abſolutely neceſſary to be left on, to detain the ſap for the augmentation of the trunk; for I have often obſerved, where trees have been thus cloſely pruned, that their heads have overgrown their bodies, ſo that they have bent downward, and become crooked.

When theſe trees have remained in the nurſery three or four years, they will then be large enough to tranſplant to the places where they are to remain; for it is not proper to let them grow very large before they are planted out; becauſe theſe are very hazardous trees to remove when old, or after they have taken deep root.

The ſeaſon for this work is, as I ſaid before, in the autumn, at which time, if they are carefully taken up, there will be little danger of their ſucceeding. When they are planted, the ſurface of the ground ſhould be mulched about their roots, to prevent its drying too faſt; and if the ſeaſon is very dry, they ſhould be watered, to ſettle the earth to their roots, which may be repeated two or three times in very dry weather; but you muſt carefully avoid giving them too much water, which is very injurious to theſe trees, when newly removed.

You ſhould alſo ſtake them, to prevent their being ſhaken and diſturbed by the winds, which would retard their rooting. In tranſplanting of theſe trees, you ſhould by no means cut their heads, which is too much practiſed: all that ſhould be done, muſt be only to cut off any bruiſed or ill-placed branches, which ſhould be taken off cloſe to the place where they are produced: but there can be no greater injury done to theſe trees than to ſhorten their roots; for when the leading bud, which is abſolutely neceſſary to draw and attract the nouriſhment, is taken off, the branch often decays entirely, or at leaſt, down to the next vigorous bud.

The trees, thus raiſed and managed, will, if planted in a proper ſoil, grow to a conſiderable magnitude, and are very proper for a wilderneſs in large gardens, or to plant in clumps in parks, &c. but if they are deſigned for timber, it is much the better method to ſow the acorns in the places where they are to remain; in order to which, you ſhould provide yourſelf in autumn with a ſufficient quantity of acorns, which ſhould be always taken from ſtraight, upright, vigorous-growing trees; theſe ſhould be gathered from under the trees as ſoon as may be after they are fallen, and, if poſſible, in a dry time, laying them thin in ſome open room to dry; after which they may be put in dry ſand, and preſerved in a dry place until the end of November, when you ſhould prepare the ground for planting them.

The directions here given are deſigned only for ſmall plantations in a garden or park, which are only for pleaſure: but where theſe trees are cultivated with a view to profit, the acorns ſhould be ſown where the trees are deſigned to grow; for thoſe which are tranſplanted will never grow to the ſize of thoſe which ſtand where they are ſown, nor will they laſt near ſo long ſound: for in ſome places, where theſe trees have been tranſplanted with the greateſt care, and they have grown very faſt for ſeveral years after, yet they are now decaying, when thoſe which remain in the place where they came up from the acorns are ſtill very thriving, and have not the leaſt ſign of decay: therefore, whoever deſigns to cultivate theſe trees for timber, ſhould never think of tranſplanting them, but ſow the acorns on the ſame ground where they are to grow; for the timber of all thoſe trees which are tranſplanted is not near ſo valuable as that of the trees from acorns. *Miller's Gardener's Dictionary.*

OAK *Leaf Galls.* Theſe are of ſeveral kinds; the remarkable ſpecies, called the muſhroom gall, is never found on any other vegetable ſubſtance but theſe leaves; and, beſides this, there are a great number of other kinds, all of them being the niduſes of certain inſects.

OAT, in huſbandry, a grain, of which there are ſeveral ſpecies, as the black, red, white, &c. and which are cultivated in the following manner.—Black oats are commonly ſown upon an etch crop, or on a lay, which they plough up in January, when the earth is moiſt, taking care to turn the turf well, and to lay it even and flat. Oats are to be ſown earlier in the northern parts of England than in the ſouthern. Oats are ſown with a broad caſt, at twice, as they do barly, harrowing it well in; but this muſt always be harrowed the ſame way that the furrows lie of a lay, or but very little croſs, for fear of raiſing the turf; but upon an etch, as ſoon as the land is ploughed on an edge, they ſow and harrow it in once; then ſow it a ſecond time, the full quantity, and harrow it five or ſix times over, obſerving to harrow it once or twice acroſs, which breaks the clods, and covers the ſeed better than harrowing all one way. They commonly ſow them upon a broad ridge, which they give the land but one ploughing for. The uſual time for ſowing black oats is, in the beginning of February, or a very few weeks later, ſometimes not till the beginning of March: they are a hardy grain, and will bear any thing of wet or cold. Four buſhels of ſeed is the quantity for an acre; but they grow beſt upon a moiſt land, though they will not miſs any where. The farmer knows that his oats are ripe when the ſtalks turn yellow, the grain feels hard, and the huſk begins to open, and ſhew the ſeed. After they are cut they ſhould lie for the dew and the rain to plump them, and make them threſh well; and if weedy, to kill the weeds: but, if there happen much rain, they muſt be got in again as ſoon as dry, otherwiſe the oats will ſoon fall out of the huſks, and great part of the crop be loſt. Red oats is a kind of corn very common in Staffordſhire, and ſome of the northern counties; it is a ſort of naked oat, and is very proper for making oat-meal because the kernel threſhes out of the hull, without carrying it to the mill, or drying of it. This oat is cultivated in the ſame manner as barley. White oats is commonly ſown upon an etch, after wheat, rye, or barley; they only give the land one ploughing, and ſow them, and harrow them, as they do the black oats, except the land is ſubject to weeds; in that caſe, it is good to plough up the wheat or rye ſtubble in November, which will make it rot the better, and be a kind of winter fallowing. Only, if you have a very dry burning ground, which black oats will not delight in, they often in that caſe ſow them upon a lay. March and April are the uſual time of ſowing white oats, and the drier the weather is when they are ſown, the better; they grow beſt upon a dry, gravelly, or ſandy land, and they are the beſt of all to be ſowed upon a land very ſubject to weeds, becauſe, being ſowed late, they allow a very little ploughing, and growing very thick after this, they over-top the weeds ſooner than any other plant. White oats generally yield about the ſame quantity as thoſe of the black, that is, about twenty buſhels from an acre. *Mortimer's Huſbandry.*

Wild OAT, in huſbandry, a kind of oat, or oat-graſs, which ſprings up without ſowing, and is much hated and dreaded by the farmers. This, in many counties of England, is the greateſt of all hindrances of the good crops of barley, and often of other grain. It is a rough and hairy oat, and uſually black. In the wetter years, and after much froſt, this is found to be moſt troubleſome. The beſt remedy the farmer has againſt this, is, to ſow the land moſt apt to produce it with beans, and when they are come up to about three inches high, to turn in ſheep upon the ground, about twenty ſheep to an acre; theſe will eat up all the ſhoots of the wild oat, and not touch the beans ſo long as there is any of the oat-ſhoots left. *Moreton's Northampt.*

OATH, *Juſjurandum*, a ſolemn affirmation, in which the perſons ſworn invoke the Almighty to witneſs that their teſtimony is true, renouncing all claim to his mercy, and calling for his vengeance if it be falſe.

OBADIOH, or *the Prophecy of* OBADIAH, a canonical book of the Old Teſtament, contained in one ſingle chapter, and is partly an invective againſt the cruelty of the Edomites, who mocked and derided the children of Iſrael, as they paſſed into captivity, and with other enemies, their confederates, invaded and oppreſſed thoſe ſtrangers, and divided the ſpoil amongſt themſelves: and partly a prediction of the deliverance of Iſrael, and of the victory and triumph of the whole church over her enemies.

OBELISK, in architecture, a truncated, quadrangular, and ſlender pyramid, raiſed as an ornament, and frequently charged either with inſcriptions or hieroglyphics. Obeliſks appear to be of very great antiquity, and to be firſt raiſed to tranſmit to poſterity precepts of philoſophy, which were cut in hieroglyphical characters: afterwards they were uſed to immortalize the great actions of heroes, and the memory of perſons beloved. The firſt obeliſk mentioned in hiſtory was that of Rameſes, king of Egypt, in the time of the Trojan war, which was forty cubits high. Phius, another king of Egypt, raiſed one of forty-five cubits; and Ptolemy Philadelphus, another of eighty-eight cubits, in memory of Arſinoe. Auguſtus erected one at Rome in the Campus Martius, which ſerved to mark the hours on an horizontal dial, drawn on the pavement. They were called by the Egyptian prieſts the fingers of the ſun, becauſe they were made in Egypt alſo to ſerve as ſtyles, or gnomons, to mark the hours on the ground. The Arabs ſtill call them Pharaoh's needles, whence the Italians call them aguglia, and the French aiguilles. The proportions in the height and thickneſs are nearly the ſame in all obeliſks; their height being nine, or nine and a half, and ſometimes ten times their thickneſs; and their diameter at the top never leſs than half, and never greater than three-fourths of that at the bottom.

OBELISK, †, in grammar, a mark in form of a dagger, uſed to refer the reader to a note in the margin, or bottom of a page.

OBJECT, in philoſophy, ſomething

apprehended, or preſented to the mind, by ſenſation or by imagination.

Object is alſo uſed for the matter of art or ſcience, or that about which it is employed; in which ſenſe it alſo coincides with ſubject.

OBJECT-GLASS *of a Teleſcope* or *Microſcope,* the glaſs placed at the end of the tube which is next the object.

OBIT, among Chriſtians, a funeral ſolemnity, or office for the dead, moſt commonly performed when the corpſe lies in the church uninterred. It likewiſe ſignifies the anniverſary office, or annual commemoration of the dead, performed yearly on the day of their death, with prayers, alms, &c.

OBLATION, a ſacrifice, or offering made to God.

OBLIGATION, any act whereby a perſon becomes bound to another, to do ſomething; as to pay a ſum of money, be ſurety, or the like.

OBLIQUE, in geometry, ſomething aſlant, or that deviates from the perpendicular. Thus an oblique angle is either an acute, or obtuſe one, i. e. any angle except a right one.

Oblique Ascension, in aſtronomy. See *Aſcenſion.*

Oblique Cases, in grammar, are all the caſes except the nominative.

Oblique Line, that which, falling on another line, makes oblique angles with it, viz. one acute, and the other obtuſe.

Oblique Percussion, in mechanics. See *Percuſſion.*

Oblique Planes, in dialling, are thoſe which recline from the zenith, or incline towards the horizon. The obliquity, or quantity of this inclination, or reclination, may be found by means of a quadrant.

Oblique Sailing, in navigation, is when a ſhip ſails upon ſome rhumb between the four cardinal points, making an oblique angle with the meridian; in which caſe, ſhe continually changes both latitude and longitude. See *Sailing.*

Oblique Sphere, where the pole is elevated any number of degrees leſs than 90°; in which caſe, the axis of the world, the equator, and parallels of declination will cut the horizon obliquely.

OBLIQUITY *of the Ecliptic.* See *Ecliptic.*

OBLONG, a figure that is longer than broad: ſuch is a parallelogram, ellipſis, &c.

OBSEQUIES, the ſame with funeral ſolemnities.

OBSERVATION, among navigators, ſignifies the taking the ſun's, or a ſtar's meridian altitude, in order thereby to find the latitude

OBSERVATORY, a place deſtined for obſerving the heavenly bodies; being generally a building erected on ſome eminence, covered with a terrace for making aſtronomical obſervations.

OBSTRUCTION, in medicine, ſuch an obturation of the veſſels, as prevents the circulation of the fluids, whether of the ſound and vital, or of the morbid and peccant kind, through them, ariſing from an acceſs of the bulk of the fluid to be tranſmitted, above the capacity of the veſſel which ought to tranſmit it. Such an obſtruction, then, proceeds either from the narrowneſs of the veſſels, or the exceſſive bulk of the fluids to be tranſmitted through them, or a concurrence of both theſe circumſtances. The narrowneſs of the veſſels is produced either by external compreſſion, the proper contraction of the veſſels themſelves, or an increaſed thickneſs in their membranes. The bulk of the molecules of the blood is increaſed by the viſcidity of the fluids, or by means of an error loci. An obſtruction may alſo proceed from a narrowneſs of the veſſels in conjunction with the preternatural bulk of the molecules of the fluids.

When the different kinds of obſtructions are diſtinctly known, it is no difficult matter to find a cure adapted to each. For that ſpecies of obſtruction which ariſes from external compreſſion, indicates the removal of the compreſſing cauſe, if poſſible. That ſpecies of obſtruction which ariſes from an increaſed contraction of the fibres may be removed, firſt, by ſuch medicines as correct the too great contraction of the fibres, veſſels, and viſcera; ſecondly, and more eſpecially, if their virtues have immediate acceſs to the part affected, which advantage is principally to be obtained by fomentations, fumigations, baths, and ointments; thirdly, by ſuch remedies as empty the too full veſſels compoſing the membranes. This intention is anſwered by evacuants, in general, but eſpecially by laxative, diluting, reſolvent, attenuating, deterſive, and evacuant medicines applied to the veſſels themſelves; and fourthly, by ſuch medicines as reſolve calloſities when formed.

OBTURATOR, in anatomy, a name for the two muſcles of the thigh, one of which is the marſupialis, and is called obturator internus, and the other the obturator externus.

OBTUSE, blunt, dull, &c. in oppoſition to acute, ſharp, &c. thus we ſay, obtuſe angle, obtuſe triangle, &c.

OCCIPITAL, in anatomy, a term applied to the parts of the occiput.

OCCIPITALES, or the OCCIPITAL MUSCLES, ariſe on each ſide from the os occipitis, where it adheres to the temporal bones.

OCCIPITIS OS, the OCCIPITAL BONE, in anatomy, the fourth bone of the cranium, ſo call·d from its ſituation in the occiput, or back part of the ſkull.

OCCIPUT, in anatomy, the hinder part of the head, or ſkull.

OCCULT, ſomething ſecret, hidden, or inviſible. The occult ſciences are magic, necromancy, cabbala, &c.

OCCULT, in geometry, is uſed for a line that is ſcarce perceivable, drawn with the point of the compaſſes, or a leaden pencil. Theſe lines are uſed in ſeveral operations, as the raiſing of plans, deſigns of building, pieces of perſpective, &c. They are to be effaced when the work is finiſhed.

OCCULTATION, in aſtronomy, the time a ſtar or planet is hid from our ſight, by the interpoſition of the body of the moon, or of ſome other planet.

Circle of Perpetual OCCULTATION, a parallel in an oblique ſphere, as far diſtant from the depreſſed pole, as the elevated pole is from the horizon. All the ſtars between this parallel and the depreſſed pole never riſe, but lie conſtantly hid under the horizon of the place.

OCCUPANT, in law, the perſon that firſt ſeizes or gets poſſeſſion of a thing; and this by law muſt be of what has a natural exiſtence, as of land, &c.

OCCUPATION, in a legal ſenſe, uſe or tenure, as in deeds it is frequently ſaid, that ſuch lands are or lately were in the tenure or occupation of ſuch a perſon. This is likewiſe uſed for a trade, or myſtery.

OCCUPATION, or OCCUPANCY, in the civil law, the poſſeſſion of ſuch things as at preſent properly belong to no private perſon, but are capable of being made ſo, as by ſeizing or taking of ſpoils in war, by catching things wild by nature, as birds and beaſts of game, &c. or by finding things before undiſcovered, or loſt by their proper owners.

OCEAN, in geography, that vaſt collection of ſalt and navigable waters in which the two continents, the firſt including Europe, Aſia, and Africa, and the laſt America, are incloſed like iſlands. The ocean is diſtinguiſhed into three grand diviſions. 1. The Atlantic ocean, which divides Europe and Africa from America, which is generally about three thouſand miles wide. 2. The Pacific Ocean, or South Sea, which divides America from Aſia, and is generally about ten thouſand miles over. And, 3. The Indian Ocean, which ſeparates the Eaſt Indies from Africa, which is three thouſand miles over. The other ſeas, which are called oceans, are only parts or branches of theſe, and uſually receive their names from the countries they border upon.

* OCEANUS, in pagan mythology, the ſon of Cœlus and Terra, the huſband of Thetis, and the father of the rivers and fountains. The ancients called him the father of all things, imagining he was produced by humidity, which, according to Thales, was the firſt principle from which every thing was produced. Homer repreſents Juno viſiting him at the remoteſt limits of the earth, and acknowledging him and Thetis as the parents of the gods. He was repreſented with a bull's head, as an emblem of the rage and bellowing of the ocean, when agitated by a ſtorm.

OCHRE, *Ochra*, in natural hiſtory, a genus of earths ſlightly coherent, and compoſed of fine, ſmooth, ſoft, argillaceous particles, rough to the touch, and readily diffuſible in water. Ochres are of various colours, as red, yellow, blue, brown, green, &c. Of the red there are eleven ſpecies, of the yellow as many, of blue one, of brown two, of green one, and of black two. All which have, at one time or other, been uſed in painting, and three of them are now uſed in medicine.

OCIMUM, or OCHYMUM, baſil, in botany, a genus of plants. Both the herb and ſeeds of baſil are uſed in medicine, and are ſaid to be good in diſorders of the lungs, and to promote the menſes.

OCTAGON, or OCTOGON, in geometry, a figure of eight ſides and angles; and this when all the ſides and angles are equal, is called a regular octagon, or one which may be inſcribed in a circle. If the radius of a circle circumcumſcribing a regular octagon be $=r$, and the ſide of the octagon $=y$; then $y = \sqrt{2r^2 - r\sqrt{2r^2}}$.

OCTAGON, in fortification, a place that has eight baſtions.

OCTAHEDRON, or OCTAEDRON, in geometry, one of the five regular bodies, conſiſting of eight equal and equiletral triangles. The ſquare of the ſide of the octahedron is to the ſquare of the diameter of the circumſcribing ſphere, as 1 to 2. If the diameter of the ſphere be 2, the ſolidity of the octahedron inſcribed in it will be 1,33333, nearly. The octahedron is two pyramids put together at their baſes, therefore its ſolidity may be found by multiplying the quadrangular baſe of either of them, by one third of the perpendicular height of one of them, and then doubling the product.

OCTANDRIA, in botany, one of the claſſes of plants eſtabliſhed by Linnæus, the eighth in order; the characters of which are, that all the plants comprehended in it have hermaphrodite flowers, and eight ſtamina or male parts in each. It is ſub-divided into orders, which are denominated from the number of piſtils contained in each flower: thus the octandria-monogynia contain eight ſtamina, and only one piſtil; the octandria-digynia, eight ſtamina, and two piſtils; and ſo on, trigynia, tetragynia, &c. denoting three, four, &c. piſtils.

OCTAVE, in muſic, an harmonical interval, conſiſting of ſeven degrees, or leſſer intervals. The moſt ſimple perception that we can have of two ſounds, is that of uniſons; as the vibrations there begin and end together. The next to this is the octave, where the more acute ſound makes preciſely two vibrations, while the grave or deeper one makes one; and wherein, by conſequence, the vibrations of the two meet at every vibration of the more grave one. Hence uniſon and octave paſs almoſt for the ſame concord: hence alſo the proportion of the two ſounds that form the octave are in numbers or in lines, as 1 : 2; ſo that two chords or ſtrings of the ſame matter, thickneſs, and tenſion, one whereof is double the length of the other, produce the octave.

OCTAVE, in law, the eighth day incluſive after any feaſt.

OCTOBER, in chronology, the tenth month of the Julian year, conſiſting of thirty-one days: it obtained the name of October from its being the eighth month in the calendar of Romulus.

OCULUS BELI, in natural hiſtory, one of the ſemi-pellucid gems, of a grayiſh white colour, variegated with yellow, and with a black central nucleus: it is of a roundiſh form, and its variegations very beautifully repreſent the pupil and iris of the eye; whence the name.

OCULUS MUNDI, one of the ſemi-pellucid gems, of a whitiſh grey colour, without any variegations.

ODA-BACHI, or ODDOBASSI, among the Turks, an officer equivalent to a ſerjeant or corporal among us. The common ſoldiers and janizaries, called oldachis, after having ſerved a certain term of years, are always preferred, and made biquelars; and from being biquelars, they in time become oda-bachis; that is, corporals of companies, whoſe numbers are not fixed, being ſome-times ten, and ſometimes twenty. Their pay is ſix doubles per month, and they are diſtinguiſhed by a large felt a foot broad, with two large oſtrich feathers.

ODE, in poetry, a ſong, or compoſition proper to be ſung. Among the ancients, odes ſignified no more than ſongs; but with us they are very different things. The ancient odes were generally compoſed in honour of their gods, as many of thoſe of Pindar and Horace. Theſe originally had but one ſtanza, or ſtrophe, but afterwards they were divided into three parts, the ſtrophe, the antiſtrophe, and the epode. The prieſts going round the altar ſinging the praiſes of the gods, called the firſt entrance, when they turned to the left, the ſtrophe; the ſecond, turning to the right, they called antiſtrophe, or returning; and laſtly, ſtanding before the altar, they ſung the remainder, which they called the epode. Heroes and triumphs were alſo ſubjects for the ode; and in courſe of time love and entertainments were likewiſe thought very ſuitable to it. Here Anacreon and Sappho excelled, and Horace has left us ſome of both ſorts wrote with peculiar ſweetneſs and elegance. Among the moderns, Dryden's ode on St. Cecilia's day, and Pope's on the ſame ſubject, are juſtly allowed to exceed every thing of the kind, either in this, or any of the modern languages. The diſtinguiſhing character of an ode is ſweetnes; the poet is to ſmooth the minds of his readers by the variety of his verſe, and the delicacy of words; the beauty of numbers, and the livelineſs of expreſſions: for variety of numbers is eſſential to the ode. At firſt, indeed, the verſe of the ode was but of one kind, but for the ſake of pleaſure, and to adapt it to muſic, the poets ſo varied the numbers and feet, that their kinds are now almoſt innumerable. One of the moſt conſiderable is the Pindaric, diſtinguiſhed by its boldneſs, and the rapidity of its flights. An ode may either be ſublime or of the lower ſtrain, jocoſe or ſerious, mournful or exulting, even ſometimes ſatirical, but never epigrammatical; and, in ſhort, it may conſiſt of wit, but not of that turn which is the peculiar charactereſtic of an epigram.

ODOROUS, or ODORIFEROUS, whatever ſmells ſtrongly, whether they be fetid or agreeable; but chiefly applied to things whoſe ſmell is briſk, and agreeable.

ODYSSEE, ὀδυσσεια, a celebrated epic poem of Homer, wherein are related the adventures of Ulyſſes, in his return from the ſiege of Troy.

The moral of the odyſſee is, that a perſon's abſence from home, ſo that he cannot have an eye to his affairs, occaſions great diſorders; and, accordingly the hero's abſence is the principal and moſt eſſential action of the whole poem. This poem, adds Boſſu, is better calculated for the people than the Iliad, where the ſubjects ſuffer rather from the bad conduct of their princes, than by their own faults; whereas the meaneſt people are as liable to ruin their eſtates and families by negligence, as the greateſt princes; and conſequently, have as much need of Homer's lectures, and are as capable of profiting by them as kings themſelves.

OECONOMICS, the art of managing the affairs of a family, or community; and hence the perſon who takes care of the revenues and other affairs of churches, monaſteries, and the like, is termed oeconomus.

OECONOMY, οικονομια, denotes the prudent conduct, or diſcreet and frugal management, whether of a man's own eſtate, or that of another.

Animal OECONOMY, the firſt branch of the theory of medicine; or that which explains the parts of the human body, their ſtructure and uſe, the nature and cauſe of life and health, and the effects, or phœnomena ariſing from them.

OECUMENICAL, general or univerſal. As an oecumenical council, or ſynod; that is, one at which the whole Chriſtian church aſſiſted.

OEDEMA, or PHLEGMATIC TUMOUR, in medicine and ſurgery, a ſort of tumour attended with paleneſs and cold, yielding little reſiſtance, retaining the print of the finger when preſſed with it, and accompanied with little or no pain. See *Tumour*.

This tumour obtains no certain ſituation in any particular part of the body, ſince the head, eye-lids, hands, ſometimes part, ſometimes the whole body, is afflicted with it. When the laſt-mentioned is the caſe, the patient is ſaid to be troubled with a cachexy, leucophlegmatia, or dropſy.

But if any part of the body is more ſubject to this diſorder than another, it is certainly the feet, which are at that time called ſwelled or oedematous feet.

The method of treating oedematous tumours is very different, according to the different cauſes to which they owe their origin: therefore we are firſt to make diligent ſearch after the genuine cauſe of the diſorder, before we attempt its cure. The external method of treating theſe tumours in the legs and feet, is uſually to have recourſe to frequent frictions with warm cloaths, to be repeated evening and morning till the parts grow red and hot; then the limbs are to be diligently preſerved from the injuries of the cold air, by wearing ſtockings made of ſome warm fur, and at night keeping hot bricks about the legs and feet. After this there is a proper bandage to be applied, which is to aſcend gradually from the feet up to the knees. The firſt ſtep towards a cure by internal medicines, according to Junker, muſt be the correcting the mucous and viſcid ſtate of the humours by the neutral ſalts, as tartarum vitriolatum, and the like; and by gum ammoniacum, the roots of pimpernel, and woods of ſaſſafras, guaiacum, and the like; with the warm aromatics, as ginger and the ſpices, and carminative ſeeds; the matter when thus attenuated is to be evacuated by purges of a ſtrength proportioned to the conſtitution of the patients. After the uſe of theſe internal and external medicines juſt before-mentioned, Heiſter thinks it proper to uſe ſtrengthening remedies externally; for which end the limb is to be placed over burning rectified ſpirits of wine, wrapping it up in cloaths, in ſuch a manner as it may receive the ſteam. This will incline the ſtagnating fluids to eſcape through the ſkin, or render them fit to return into the circulation, and at the ſame time reſtore the natural tone of the limb.

* OEDIPUS, in fabulous hiſtory, the

ſon of Laius king of Thebes, and Jocaſta. He was given by his father to a ſhepherd, with directions to put him to death, to prevent the misfortunes with which he was threatened by an oracle. But the ſhepherd, unwilling to ſpill his blood, tied him by the feet to a tree, that he might be devoured by wild beaſts. The infant was found in this ſituation by another ſhepherd, named Phorbas, who carried him to Polybus, king of Corinth; where the queen, having no children, educated him as if he had been her ſon. When he was grown up, he was informed that he was not the ſon of Polybus, on which, by order of the oracle; he went to ſeek for his father in Phocis; but ſcarce was he arrived in that country, when he met his father on the road, and killed him without knowing him. A ſhort time after, having delivered the country from the monſter called the Sphinx, he married Jocaſta, without knowing that ſhe was his mother, and had four children by her; but afterwards being informed of his inceſt, he quitted the throne, and thinking himſelf unworthy of the light, put out his eyes.

OENANTHE, water-dropwort, in botany. A ſpecies of this plant, called the hemlock dropwort, with all the leaves multifid and obtuſe, is a terrible poiſon.

OENOTHERA, the PRIMROSE of VIRGINIA, in botany.

OESOPHAGUS, in anatomy, the gula, or gullet, is a membranaceous canal, reaching from the faucus to the ſtomach, and conveying into it the food taken in at the mouth. Its figure is ſomewhat like that of a funnel, and its upper part is called by anatomiſts the pharynx.

OFFICE, a particular charge or truſt, or a dignity attended with a public function.

OFFICE, a place or apartment appointment for officers to attend in order to diſcharge their reſpective duties

OFFICE, in architecture, in the plural denotes all the apartments appointed for the neceſſary occaſions of a palace or great houſe, as kitchens, pantries, confectionaries, &c.

OFFICE, in the canon-law, a benefice that has no juriſdiction annexed to it.

OFFICER, a perſon poſſeſſed of a poſt or office.

Commiſſion-OFFICERS, thoſe which are appointed by the king's commiſſion: ſuch are all from the general to the cornet inclusive, who are thus denominated in contradiſtinction to warrant-officers, who are appointed by the colonel's or captain's warrant, as quarter maſters, ſerjeants, corporals, and even chaplains and ſurgeons.

Field-OFFICERS, ſuch as command a whole regiment, as the colonel, lieutenant colonel, and major.

Flag-OFFICERS. See *Flag-Officers* and *Admirals*.

General-OFFICERS, thoſe whoſe command is not limited to a ſingle company, troop, or regiment; but extends to a body of forces, compoſed of ſeveral regiments: ſuch are the general, lieutenant-general, major-generals, and brigadiers.

OFFICERS *of Police*, thoſe in whom the government and direction of the affairs of a community are inveſted, as mayors, aldermen, ſheriffs, juſtices of the peace, &c.

Royal-OFFICERS are thoſe who adminiſter juſtice in the king's name, as the judges, &c.

Sea-OFFICERS, or OFFICERS *of the Marine*, thoſe who command ſhips of war.

Staff-OFFICERS, ſuch as, in the king's preſence, bear a white ſtaff, or wand; and at other times, on their going abroad, have it carried before them by a footman bare-headed: ſuch are the lord ſteward, lord chamberlain, lord treaſurer, &c. The white ſtaff is taken for a commiſſion, and at the king's death each of theſe officers breaks his ſtaff over the hearſe made for the king's body, and by this means lays down his commiſſion, and diſcharges all his inferior officers.

Subaltern-OFFICERS, thoſe who adminiſter juſtice in the name of ſubjects; as thoſe who act under the earl marſhal, admiral, &c. In the army, the ſubaltern officers are all thoſe under the degree of a captain.

OFFICIAL, in the canon law, an eccleſiaſtical judge, appointed by a biſhop, chapter, abbot, &c. with charge of the ſpiritual juriſdiction of the dioceſe. Of theſe there are two kinds: the one is, as it were, the vicar-general of the dioceſe, and is called by the canoniſts officialis principalis, and in our ſtatute law, the biſhop's chancellor. There is no appeal from his court to the biſhop, his being eſteemed the biſhop's court.

OFFICIAL, a deputy appointed by an archdeacon, as his aſſiſtant, who ſits as judge in the archdeacon's court.

OFFICINAL, in pharmacy, an appellation given to ſuch medicines, whether ſimple or compound, as are required to be conſtantly kept in the apothecaries ſhops.

OFF-SETS, in gardening, the young ſhoots that ſpring from the roots of plants; which, being carefully ſeparated, and planted in a proper ſoil, ſerve to propagate the ſpecies.

OFF-SETS, in ſurveying, perpendiculars let fall, and meaſuring from the ſtationary lines to the hedge, fence, or extremity of an encloſure.

OGEE, or O. G. in architecture, a moulding, conſiſting of two members, the one concave, and the other convex; or, of a round and a hollow, like an S.

OIL, *Oleum*, in natural hiſtory, an unctuous inflammable matter drawn from ſeveral natural bodies, as animal and vegetable ſubſtances. The chymiſts call it ſulphur, being the ſecond of their hypoſtatical, and of the true five chemical principles. To this they attribute all the diverſity of colours, and all the beauty and deformity of bodies: probably their various odours in a great meaſure ariſe from it. It ſweetens the acrimony of ſalts; and by ſtopping, or filling up the pores of a mixed body, keeps it longer from corruption, where it abounds. And we find that the ever-greens, ſuch as box, holly, &c. abound more with oil than other plants. There are two ſorts of oils; one of which ſeems to be mixed with ſpirit, for it can never be drawn pure, and which will ſwim upon water; ſuch as oil of anniſeeds, lavender, roſemary, &c. which the chemiſts call eſſential, and is commonly drawn in an alembic, with plenty of water. And another kind, which probably is mixed with ſalts, and theſe will ſink in water; ſuch are the oils of ponderous woods, as guaiacum, box, cloves, &c. There are ſome things which are very improperly called oils; as oil of tartar per deliquium, which is only a fixed ſalt diſſolved. Oil of vitriol, which is nothing but the moſt cauſtic and ſtrongeſt part of the ſpirit of vitriol. Oil of antimony, which is only a mixture of antimony and an acid ſpirit. Oils are of two kinds, the one obtained by expreſſion, and the other by diſtillation.

The method of procuring oil by expreſſion from nuts, ſeeds, maſt, &c.

Take two pounds of ſweet almonds, blanched and beat ſmall in a ſtone mortar; wrap the maſs up in a piece of ſtrong thick canvaſs, and commit it to a ſtrong ſcrew preſs; when, being ſqueezed between two cold iron cheeks, it will gradually part with a conſiderable quantity of oil. This method holds of all theſe vegetable matters that contain a copious oil, in a looſe manner, or in certain cavities or receptacles; the ſides whereof being broke, or ſqueezed, makes them let go the oil they contain: and thus the zeſt or oil of lemon-peel, orange-peel, citron-peel, &c. may be readily obtained by preſſure, without the uſe of fire. But how far this method of obtaining oils may be applied to advantage, ſeems not hitherto conſidered. It has been commonly applied to olives, almonds, linſeed, rape-ſeed, beech-maſt, ben-nuts, wal-nuts, bay-berries, mace, nutmeg, &c. but not that we know of to juniper-berries, Caſhew-nuts, Indian cloves, pine-apples, and many other ſubſtances that might be enumerated, both of foreign and domeſtic growth. It has, however, been of late ſucceſsfully applied to muſtard-ſeed, ſo as to extract a curious gold-coloured oil, leaving a cake behind, fit for making the common table-muſtard. Certain dry matters, as well as moiſt ones, may be made to afford oils by expreſſion, by grinding them into a meal, which, being ſuſpended to receive the vapour of boiling water, will thus be moiſtened ſo as to afford an oil, in the ſame manner as almonds; and thus an oil may be procured from linſeed, hemp-ſeed, lettuce-ſeed, white poppy-ſeed, &c. As to the treatment of oils, obtained by expreſſion, they ſhould be ſuffered to depurate themſelves by ſtanding in a moderately cool place, to ſeparate from their water, and depoſite their fæces; from both which they ought to be carefully freed. And if they are not thus rendered ſufficiently pure, they may be waſhed well with freſh water, then throughly ſeparated from it again, by the ſeparating-glaſs, whereby they will be rendered bright and clear. Particular care muſt be had to keep ſuch of theſe oils cool as are deſigned for eating, or for any internal uſe; becauſe they are apt in a few days to turn rancid and corroſive with the heat of the ſummer's ſun, ſo as to prove very unwholſome. Hence the phyſician and apothecary ſhould be curious that the oils given in pluriſies and other diſtempers be freſh drawn from ſound ſubjects, no way tainted, or already turned rancid; as almonds, piſtachios, and other nuts are apt to do: and again, that theſe oils have felt no conſiderable heat, either by drawing

ing or ſtanding long in a warm place: and the ſame caution ſhould likewiſe extend to animal oils, intended both for internal and external uſe; ſince theſe alſo become rancid, or change to a yellow, red, or grey colour in hot weather; and thus become exceedingly naucious and corroſive, as we ſee in butter, bacon, and other fat bodies; which then prove only fit for the tallow-chandler, or other ignoble uſes.

The method of procuring eſſential oil is in the following manner.

Take eight pounds of juniper-berries, bruiſe them in a ſtone mortar, put them into a ſtill, along with four gallons of river water; and, working with a briſk fire, draw off a gallon of water, with it will be obtained a conſiderable proportion of a fragrant eſſential oil, which muſt be ſeparated from the water by a ſeparating glaſs.

This proceſs is applicable to the diſtilling of the eſſential oils from flowers, leaves, barks, roots, woods, gums, and balſams with a ſlight alteration of circumſtances, as by longer digeſtion, briſker diſtillation, &c according to the tenacity and hardneſs of the ſubject, the ponderoſity of the oil, &c.

Eſſential oils may be divided into two claſſes, according to their different ſpecefic gravities; ſome floating upon water, and others readily ſinking to the bottom. Thus, the eſſential oils of cloves, cinnamon, and ſaſſafras, readily ſink; whereas thoſe of lavender, marjorum, mint, &c. ſwim in water: the lighteſt of theſe eſſential oils, is, perhaps, that of citron-peel, which even floats in ſpirit of wine; and the heavieſt ſeems to be oil of ſaſſafras. See *Gravity*.

For obtaining the full quantity of the more ponderous oils from cinnamon, cloves, ſaſſafras, &c. it is proper to reduce the ſubjects to powder; to digeſt this powder for ſome days in a warm place, with thrice its quantity of ſoft river water, made very ſaline by the addition of ſea-ſalt, or ſharp with oil of vitriol; to uſe the ſtrained decoction, or liquor left behind in the ſtill, inſtead of common water, for freſh digeſtion; to uſe for the ſame purpoſe the water of the ſecond running, after being cleared of its oil; not to diſtil too large a quantity of theſe ſubjects at once; to leave a conſiderable part of the ſtill, or about one fourth empty; to uſe a briſk fire, or a ſtrong boiling heat, at the firſt, but to ſlacken it afterwards; to have a low ſtill-head, with a proper internal ledge and current leading to the noſe of the worm; and, finally, to cohobate the water, or pour back the liquor of the ſecond running upon the matter in the ſtill, repeating this once or twice.

Many of the eſſential oils being dear, it is a very common practice to adulterate or debaſe them ſeveral ways, ſo as to render them cheaper both to the ſeller and the buyer. Theſe ſeveral ways ſeem reducible to three general kinds, each of which has its proper method of detection, viz. 1. With expreſſed oils. 2. With alcohol. And, 3. With cheaper eſſential oils.

If an eſſential oil be adulterated with an expreſſed oil, it is eaſy to diſcover the fraud, by adding a little ſpirit of wine to a few drops of the ſuſpected eſſential oil, and ſhaking them together; for the ſpirit will diſſolve all the oil that is eſſential, or procured by diſtillation, and leave all the expreſſed oil that was mixed with it, untouched.

If an eſſential oil be adulterated with alcohol, or rectified ſpirit of wine, it may be done in any proportion, up to that of an equal quantity, without being eaſily diſcoverable, either by the ſmell or taſte: the way to diſcover this fraud, is to drop a few drops of the oil into a glaſs of fair water: and if the oil be adulterated with ſpirit, the water will immediately turn milky, and by continuing to ſhake the glaſs, the whole quantity of ſpirit will be abſorbed by the water, and leave the oil pure at top.

Finally, if an eſſential oil be adulterated by a cheaper eſſential oil, this is commonly done very artfully: the method is to put fir-wood, turpentine, or oil of turpentine into the ſtill, along with the herbs to be diſtilled for their oil, ſuch as roſemary, lavender, origanum, &c. and, by this means, the oil of turpentine diſtilled from theſe ingredients comes over in great quantity, and intimately blended with the oil of the genuine ingredient. The oils thus adulterated always diſcover themſelves in time, by their own flavour being overpowered by the turpentine-ſmell; but the ready way to detect the fraud is to drench a piece of rag, or paper, in the oil, and hold it before the fire; for thus the grateful flavour of the plant will fly off, and leave the naked turpentine ſcent behind.

The virtues of oils being the ſame with thoſe of the ſubſtances from whence they are obtained, may be learned under their ſeveral articles.

Oil is well known to ſtop the violent ebullition of various ſubſtances: thus, if ſugar, honey, &c. be boiling, and in danger of riſing over the ſides of the veſſel, the pouring in a little oil makes it immediately ſubſide.

OIL-MILL, one that ſerves to bruiſe or break the nuts, olives, and other fruits and grains, whoſe juice is to be drawn by expreſſion, to make oil.

There are two different methods of expreſſing oils; one chiefly uſed in extracting oil from olives, &c. by means of a very ſtrong preſs.

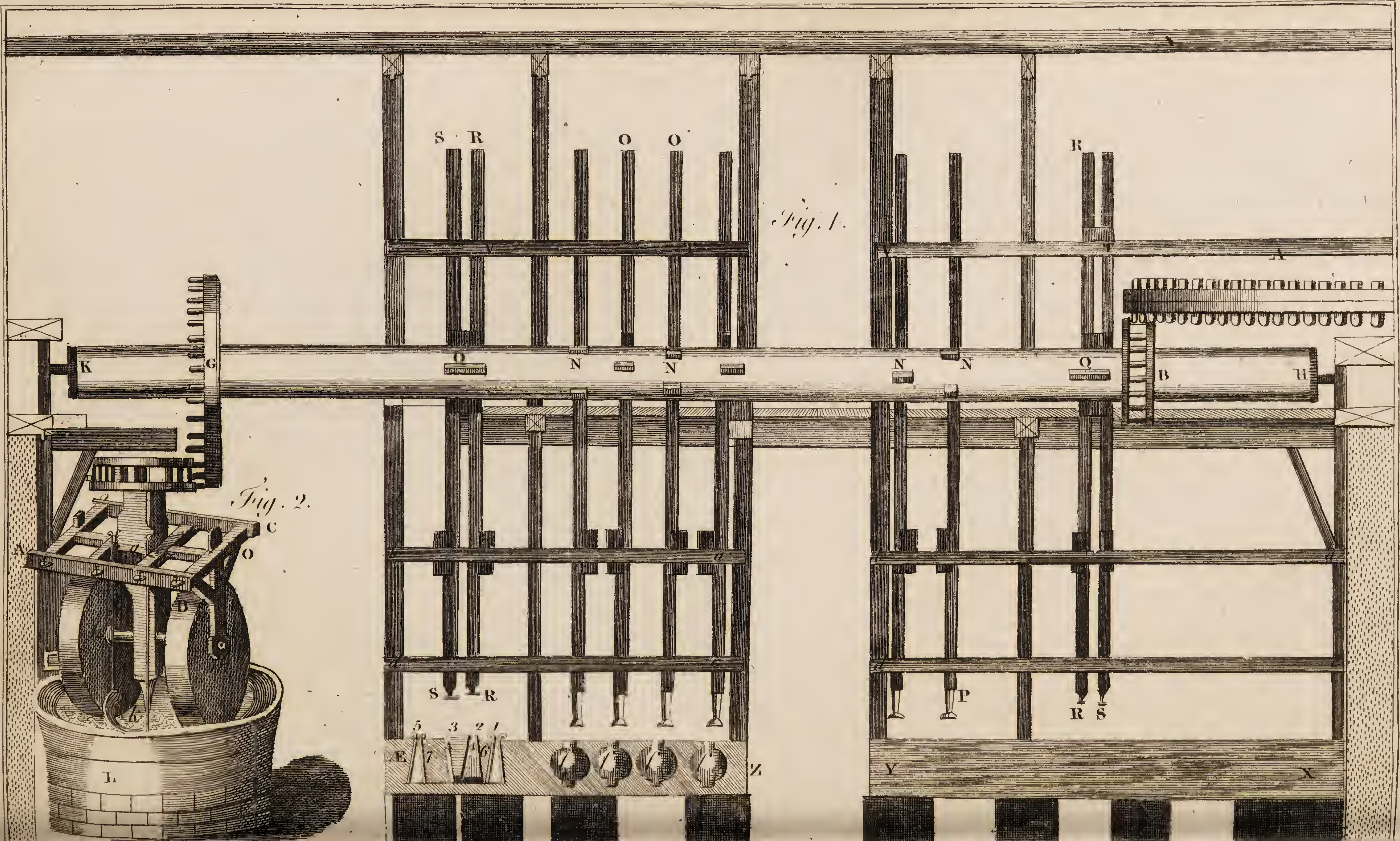
The other, which is commonly called an oil-mill, is chiefly uſed for expreſſing oils from ſeeds, &c. We have given a perſpective view of one, plate xxxvii. where A is a large wheel turned either by water or horſes, the cogs of which work in the trundle-head B, and give motion to the large ſhaft H K. N, N, N, N, are lifting cogs, which raiſe the ſtampers O P, O P, &c. Q, Q, are larger lifting cogs, being intended to raiſe the ſtampers R R, S S, &c. to a much greater height than the former. T V, *c d*, are battens for guiding the ſtampers in their motion; and *a*, *b*, battens to which the catches are fixed for ſuſpending the ſtampers. The ſeeds are ground either in the mill repreſented in *fig.* 2, or pounded in the mortars *f*, *f*, *f*, *f*. When the ſeeds are thus thoroughly bruiſed, the maſh is taken out, and put into ſmall bags of hair lined with thin canvas. The bags thus filled are placed in the preſs at 1, 5, and the oil extracted by the force of wedges driven by the ſtampers S, S. 6, 4, 4, 7, are pieces of wood for filling up the vacuities when the bags are placed in the preſs. 3 is the wedge driven by the ſtamper S S, which forces the bags filled with the bruiſed ſeed into a leſs compaſs, and conſequently extracts the oil. When the ſeeds are ſufficiently preſſed, the ſtamper R R is raiſed and by falling on the inverted wedge 2, the whole preſſure is removed, and the bags, together with the wedge 3, eaſily taken out of the preſs. X Y repreſents the outſide of the preſs and mortars; and Z Æ, a ſection of both.

Fig. 2, is a mill for grinding the ſeeds. It conſiſts of two large ſtones moving on their edges in a circular bed. The mill is put in motion by means of the cog-wheel G, whoſe cogs play in the rounds of the lantern D. A B C D is a frame of wood for turning the ſtones *m*, *b*. *e k f* is a kind of hook for ſtirring the ſeeds while the ſtones revolve round their axis. The baſis L of the mill-bed is hollow, for receiving the oil preſſed out of the ſeeds in grinding.

OINTMENT, or UNGUENT, in pharmacy and ſurgery. See *Unguent*.

* OLDCASTLE, Sir John, lord Cobham, the firſt author, and the firſt martyr, among our nobility, a man whoſe virtues made him a reformer, whoſe valour a martyr, and whoſe martyrdom an enthuſiaſt. The amiableneſs of his character procured him the general appellation of the good lord Cobham. He married the neice and heireſs of the lord Cobham, and, upon his marriage, aſſumed that title. He was much eſteemed by king Henry V. and ſerved with great zeal at a time when the church was lighting its holy fires for the diſciples of Wickliffe. The great increaſe of that ſect greatly alarmed the government, eſpecially as lord Cobham was at the head of it. Henry, at firſt, reſiſted the inſinuations thrown out againſt him, whom he tried to ſave by gentle exhortations; but as the peer was firm, it naturally made the prince weak, and he delivered the hero over to the inquiſitors. Lord Cobham was in priſon, but eſcaped. The clergy, however, with great zeal for the royal perſon, informed the king, who was then at Eltham, that 20,000 Lollards were aſſembled at St. Giles's, for the deſtruction of him and his brothers. The brave young monarch immediately headed a troop, and arriving at ten at night, at the ſign of the axe, without Biſhopſgate, took the man of the houſe and ſeven others priſoners. Fourſcore more were ſeized about St. Giles's, and ſome of them being induced, it is ſaid, to confeſs the deſign of murdering the royal family, and make the lord Cobham protector, the king no longer doubted of the conſpiracy, but ordered about half of them to be executed, and iſſued a proclamation for apprehending Cobham, who was concealed in Wales. Lord Cobham was ſoon after taken by the lord Powis, after a brave reſiſtance, in which he was wounded The proclamation for apprehending him, offered a thouſand marks of gold, twenty pounds a year for life, and a diſcharge from all taxes to any city, borough, or town that ſhould deliver him up. He was burnt at St. Giles's in the Fields, in February, 1418.

Plate XXXVII. Facing Oil Mill.



1418, and died entreating Sir Thomas Erpingham, that if he ſaw him riſe from death to life the third day; he would procure that his ſect might live in peace and quiet. He wrote twelve concluſions, addreſſed to the parliament of England, and a piece, entitled the complaints of the countryman.

* OLDHAM, John, an eminent poet, ſon of Mr. John Oldham, a non-conformiſt miniſter, was born at Shipton, in Glouceſterſhire, on the 9th of Auguſt, 1653. He was educated at Oxford, and in 1674 took the degree of bachelor of arts. In a ſhort time after, he became uſher to the free-ſchool of Croydon, in Surry, where he received a viſit from the earl of Rocheſter, the earl of Dorſet, Sir Charles Sedley, and other perſons of diſtinction, merely on account of his verſes. He was afterwards private tutor to the children of ſeveral gentleman, and having ſaved ſome money came to London, where he became a votary to the bottle: he contracted a ſtrict friendſhip with Mr. Dryden; and was careſſed by the earl of Kingſton, with whom he lived at Holme-Pierpont, in Nottinghamſhire, where being ſeized by the ſmall-pox, he died on the 9th of December, 1683, in the 30th year of his age. His works are printed in two volumes 12mo. They chiefly conſiſt of ſatires, odes, tranſlations, paraphraſe of Horace, and other authors, elegiac verſes, imitations, parodies, familiar epiſtles, &c.

OLEANDER, *nerium*, in botany. See the article *Nerium*.

OLFACTORY NERVES, the firſt pair of the head; ſo called from their being the immediate inſtrument of ſmelling.

OLIBANUM, in pharmacy, a gummy reſin brought from Turkey and the Eaſt-Indies, uſually in drops or tears, like thoſe of maſtich, but larger, of a pale yellowiſh colour, which by age becomes reddiſh. Of the tree which produces it we have no certain account.

This gummy reſin has a moderately ſtrong, not very agreeable ſmell, and a bitteriſh ſomewhat pungent taſte: in chewing, it ſticks to the teeth, becomes white, and renders the ſaliva milky. Laid on a red-hot iron, it readily catches flame, and burns with a ſtrong, diffuſive, not unpleaſant ſmell: it is ſuppoſed to have been the incenſe uſed by the ancients in their religious ceremonies, though it is not the ſubſtance now known by that name in the ſhops.

Olibanum is recommended in diſorders of the head and breaſt, in hemoptoes, and the alvine and uterine fluxes: the doſe is from a ſcruple to a dram or more.

OLIGARCHY, a form of government, where the adminiſtration is lodged in the hands of a few people.

OLIO, or OGLIO, in cookery, a ſavoury diſh compoſed of a great variety of ingredients.

OLIVE, *Olea*, in botany, a genus of trees, with a monopetaleous flower, divided into four ſegments at the limb; the leaves are in general oblong and evergreen: the ovary, which is fixed to the center of the flower-cup, becomes an oval, ſoft, pulpy fruit, abounding with a fat liquor, incloſing a hard rough ſtone. There are five ſorts of olive-trees preſerved in the gardens of the curious, where they are planted either in pots or caſes, and removed into the green-houſe in the winter, with oranges, myrtles, &c. but they are moſt of them hardy enough to endure the cold of our ordinary winters in the open air, provided they are planted upon a dry ſoil, and in a warm ſituation, though in ſevere winters they are demoliſhed, or at leaſt loſe their heads, or are killed to the ſurface; but this is what they are liable to in the ſouth parts of France, in which country theſe trees abound; and yet in very ſharp winters are moſt of them deſtroyed. Theſe trees are generally brought over from Italy every ſpring, by the perſons who bring over the oranges, jaſmines, &c. from whom they may be procured pretty reaſonably; which is a better method than to raiſe them from layers in this country, that being too tedious; and thoſe which are thus brought over, have many times very large ſtems, to which ſize young plants in this country would not arrive in ten or twelve years growth. When you firſt procure theſe ſtems, you ſhould, after having ſoaked their roots twenty-four hours in water, and cleaned them from the filth they have contracted in their paſſage, plant them in pots filled with freſh light ſandy earth, and plunge them into a moderate hot-bed; obſerving to ſcreen them from the violence of the ſun in the heat of the day, and alſo to refreſh them with water, as you ſhall find the earth in the pots dry. In this ſituation they will begin to ſhoot in a month or ſix weeks after, when you ſhould let them have air in proportion to the warmth of the ſeaſon; and, after they have made pretty good ſhoots, you ſhould inure them to the open air by degrees; into which they ſhould be removed, placing them in a ſituation where they may be defended from ſtrong winds: in this place they ſhould remain till October following, when they muſt be removed into the green-houſe, as was before directed. Having thus managed theſe plants until they have acquired ſtrong roots, and made tolerable good heads, you may draw them out of the pots, preſerving the earth to their roots, and plant them in the open air in a warm ſituation, where you muſt manage them as was before directed for the young ones, and theſe will in two or three years produce fruit, provided they do well. The Lucca and box-leaved olives are the hardieſt, for which reaſon they ſhould be preferred to plant in the open air; but the firſt ſort will grow to be the largeſt trees. Olives are very oily and ſmooth, and therefore not good for the ſtomach, being apt to pall and relax it too much. The oil of olives is judiciouſly mixed with cataplaſms of a maturating nature: it is accounted heating, emollient, and vulnerary; and good againſt coſtiveneſs and gripes.

OLYMPIAD, in chronology, the ſpace of four years; ſo called from the Olympic games, inſtituted by Hercules, anno mundi 2836, which were celebrated every four years, about the time of the ſummer ſolſtice, upon the banks of the river Alphæus, near the city Piſa, and the temple of Jupiter Olympius, in Elis, a province in Peloponneſus. Theſe games were reſtored by Iphitus, four hundred and forty-two years after the firſt inſtitution by Hercules, and twenty-two or twenty-three years before the foundation of Rome. The Greek hiſtorians began a new epocha, the firſt year of the firſt Olympiad. We are to obſerve that, to ſpeak exactly, every Olympiad year belongs to two Julian years; that is to ſay, the firſt ſix months from July to January to the foregoing; and the ſix laſt months from January to July, to the following year; though moſt authors ſpeak of the Olympiads as if they had begun the firſt of January, as for example, it is the ſame thing to ſay, ſuch a thing was done in the firſt year of the ſixth Olympiad, as to ſay, it was done in that Julian year in which the ſixth Olympiad began; theſe were every fifth year, or, as the interpreter of Lycophron ſays, every fiftieth month.

The deſign of the inſtitution was to accuſtom young men to running, leaping, and other exerciſes. They held but five days. The conqueror was called Olympionices, and to be crowned there, was as glorious as to triumph at Rome; for the Olympionices was attended home in his coach, the wall of the city broken down, and he drove in at the breach. Theſe were called Olympia magna, to diſtinguiſh them from other plays of this nature that were inſtituted at Macedonia, at Athens, &c. Choræbus was the firſt who was crowned at theſe games for having obtained the victory by running. The number of Olympic years to the birth of Chriſt is 776, and the years of Rome before that time but 753, becauſe the firſt Olympiad of the chronologers began 23 years before the foundation of Rome.

* OLYMPIC GAMES, in Grecian antiquity. They were inſtituted by Hercules, the ſon of Alcmena, in honour of the Olympian Jupiter, out of the ſpoils taken from Auges king of Elis, whom he had dethroned and plundered, for defrauding him of the reward he had promiſed him for cleanſing his ſtable; however, they were either wholly laid aſide, or but little frequented, till the time of Iphitus, who re-inſtituted this ſolemnity about 480 years after the Trojan war, from which time the number of Olympiads are reckoned. Theſe games were celebrated every fifth year, and always laſted five days. The common exerciſes were leaping, running, throwing darts, and wreſtling; muſicians, poets, and artiſts, alſo contended for the victory by the excellence of their performances. Such as obtained the victory in any of theſe, was crowned with an olive garland, conducted home in a triumphal chariot, and a breach was made in the city-wall to give him entrance. At ſome places the victors had preſents made them by their native city, were honoured with the firſt places at all ſhews and games, and ever after maintained at the public expence.

OMELET, or AMELET, a kind of pancake or fricaſee of eggs, with other ingredients, very uſual in Spain and France.

OMEN, a ſign, or indication of ſome future event, taken from the mouth of the perſon ſpeaking.

OMENTUM, in anatomy, the cawl, alſo called reticulum, from its ſtructure reſembling that of a net. When the peritonæum is cut, as is uſual, and the cavity of the abdomen laid open, the omentum or cawl preſents itſelf firſt to view. This membrane, which is like a wide and empty bag, covers the greateſt part of the guts. Its mouth is tied on the right ſide to the hollow of the liver, on the left to the ſpleen, backwards to the back-part of the duodenum, and that part of the colon which lies under the ſtomach, and forwards to the bottom of the ſtomach and pylorus. Its bottom is looſe, and being tied to no part, but floating upon the ſurface of the guts below the navel, was the reaſon why the cawl was by the Greeks called εϖιϖλοον. Sometimes it deſcends as low as the os pubis, within the productions of the peritonæum, cauſing an epiplocele.

ONANIA, or ONANISM, terms framed by ſome late empiricks, to denote the crime of ſelf-pollution, mentioned in Scripture to have been practiſed by Onan and puniſhed in him with death.

ONDEE, in heraldry, the ſame with wavy. See *Wavy*.

ONION, *Cepa*, in botany, the name of a genus of plants. Onions are much eaten, and it would be well if they were yet more ſo; they attenuate tough humours, cleanſe the ſtomach, and excite appetite, and in ſome degree promote the menſes; but they are apt to breed flatulencies, and, if eaten too largely, to affect the head and diſturb the ſleep afterwards. An onion, boiled to perfect ſoftneſs, is recommended by many as a cataplaſm for ripening peſtilential buboes. A freſh cut onion, rubbed on the part till it becomes red and itch, is ſaid to be a cure for baldneſs. A mixture of equal parts of juice of onions and ſpirits of wine is eſteemed a cure for deafneſs, a few drops being put at times into the ears: an onion cut in two, and macerated an hour in the ſame ſpirit, is a good application for the head-ach. A cataplaſm of roaſted onion and butter is an excellent application for the piles. The three ſorts of onions propagated for the ſake of their roots for winter uſe, are the Straſburgh onion, the red Spaniſh onion, and the white. Theſe are to be propagated by ſowing their ſeeds in the latter end of February, in a dry and ſomewhat ſandy ſoil, yet rich; in about a month's time the plants will appear, and, in a fortnight after that, they will be forward enough for hoeing, which muſt be done with a very ſmall hoe, cutting up all the weeds, and leaving the onions two inches aſunder; this ſhould be done in a dry ſeaſon, and the ground will then be clear from weeds for a month: at the end of this time, they muſt be hoed again, and cut to three inches apart; and a month after this, to four inches; at which diſtance they will thrive well, and grow very large. Toward the latter end of July, the onions will have arrived at their full growth, which is known by their leaves hanging down and ſhrivelling; and they muſt at this time be pulled up, and ſpread on a dry place, and turned every day, to prevent their ſtriking freſh roots; in a fortnight's time they will be dry enough to houſe, and ſhould be wiped clean, and ſpread thin in an upper loft, or garret. The differences between theſe ſpecies are not eſſential, they often degenerating into one another; and even the large Portugal onion, after a few years, with us, will loſe itſelf ſo far, that no one would imagine it came of that race. *Miller's Gard. Dict.*

Welſh ONIONS, a ſort of onions propagated by gardeners, for the uſe of the table in ſpring; they never make any bulb, and are therefore only to be eaten green with ſallads. They are propagated by ſowing their ſeeds towards the end of July in beds of a dry but rich ſoil; and, in three weeks after ſowing, they will appear above ground: they muſt be kept carefully cleared from weeds. About October all their leaves die away, which has occaſioned ſome to think all the plantation loſt, and to dig up the ground for ſome other uſe; but, if they are ſuffered to ſtand, they will ſhoot up again very ſtrong in January, and from that time will grow very vigorouſly, and reſiſt all weathers, and will be fit to draw for young onions in March, and are extremely green and fine, and more valued at market at that ſeaſon than any other kind; but they are much ſtronger than any other onions, and have nearly the taſte of garlic.

ONOMATOPOEIA, in grammar and rhetoric, a figure where words are formed to reſemble the ſound made by the things ſignified; as the buz of bees, the cackling of hens, the whiſtleing of the winds, &c.

ONTOLOGY, or ONTOSOPHY, the doctrine or ſcience *de ente*; that is, of being, in the general, or abſtract.

ONYX, in natural hiſtory, one of the ſemipellucid gems, with variouſly coloured zones, but none red; being compoſed of cryſtal, debaſed by a ſmall admixture of earth; and made up either of a numa number of flat plates, or of a ſeries of coats ſurrounding a central nucleus, and ſeparated from each other by veins of a different colour, reſembling zones or belts.

OOST, in huſbandry, a name given by the people who manure hops, for the kiln in which they dry them after they are picked from the ſtalks.

OPACITY, in philoſophy, a quality of bodies which renders them impervious to the rays of light. See *Light*.

The opacity and tranſparency of bodies in general are occaſioned thus: let A B (plate XXXVI. fig. 2) be the ſurface of an opake body A B C D; a ray of light G H falling thereon in the point H, will in part be reflected into the ray H I, and by this reflected ray, the point H becomes viſible to the eye at I; and thus all the points, and conſequently the whole ſurface, is made viſible by that part of the light which it reflects. But the other part of the ray entering into the body, being irregularly refracted and reflected through its internal ſubſtance of particles and pores, becomes divided, diſſipated, abſorbed, and loſt therein; and therefore, as none of the rays can come from the internal parts to the eye, ſo none of thoſe parts can be viſible: and the body in that caſe is ſaid to be opake. In order to this we muſt conſider, that though the whole body be opake, yet the particles of ſuch a body are not ſingly opake, but freely tranſmit the light without reflecting any part between the ſurfaces, and are therefore in themſelves tranſparent; and were theſe particles contiguous to each other, the light would paſs from one to another, and ſo through the whole, without reflection; as we find by experiment it will paſs through ſeveral contiguous pieces of poliſhed glaſs, and thus produce tranſparency. But if the particles do not touch in ſuch a manner as to leave the interſtices or pores exceeding ſmall, there will be a reflection of light at every pore from the air which it there meets with, as being a medium of different denſity. For it is known by experiment, that though a ray of light will paſs from one piece of glaſs to another that is contiguous without reflection, yet will it not paſs from the glaſs through the contiguous air without being in part reflected; conſequently, where the pores are large and very numerous, there the reflection of light will be ſo great upon the whole as to cauſe a total diſſipation and loſs of the light that entered the body, and ſo render it opake. This is confirmed by taking ten pieces of clear glaſs, and laying them one upon another over a leaf of print quite dry, and having only air between them; then taking ten other pieces of the ſame glaſs, and putting them into water, ſo that it may fill all their interſtices; and then laying them on the ſame printed paper by the other, a perſon looking through each, will ſee the print, or reading, much more diſtinct, clear and bright, through the latter pieces than through the former, the rays being more regularly tranſmitted through them where the denſity of the parts is not ſo unequal, and alſo with much leſs reflection than through the other, where the light undergoes a conſiderable reflection at every interſtice or place of air between the glaſſes.

It is hence alſo that tranſparent bodies are rendered opake by ſeparating their parts, and rendering them more porous: thus beer, before it is raiſed into froth, is tranſparent; but the froth, by reaſon of its pores, becomes opake: thus dry paper is more opake than that which is wetted with water or oil, becauſe more porous: thus the oculus mundi ſtone is more opake when dry than when ſteeped in water; and glaſs, reduced to powder, is no longer tranſparent. Hence it follows, that the parts of bodies, and their pores, muſt not be leſs than a certain definite bigneſs to render them opake; for the opakeſt bodies, if the parts be ſubtilely divided, become perfectly tranſparent: thus copper, diſſolved in aqua fortis, has all its particles pellucid; and the whole ſolution is tranſparent: thus a bubble blown off ſoap water, may become ſo thin on the top as to reflect no light, but will tranſmit the whole: thus water, ſalts, glaſs, ſtones, &c. though they are as porous as other bodies, yet their parts and interſtices are too ſmall to cauſe reflections in their common ſurfaces.

Therefore, in all tranſparent bodies, as B E F C, (fig. 3.) a ray of light, K L, falling on its ſurface, in the point L, will there be in that part reflected, as before into the ray L M; the other part will go regularly, or in a rectilineal direction from the upper to the lower ſurface at N, where meeting with the air, (a medium of a different denſity) it will be in part reflected again into the ray N O; the other part goes out to the eye at P; by which means all the internal parts from whence that ray comes, will be rendered viſible to the eye: and ſince this

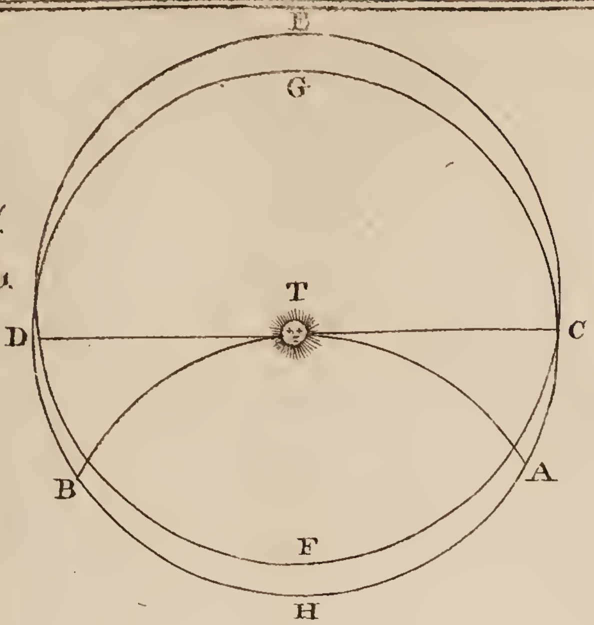


Fig. 1.
Nodes.

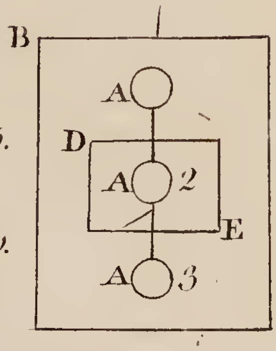


Fig. 5.
Optics.

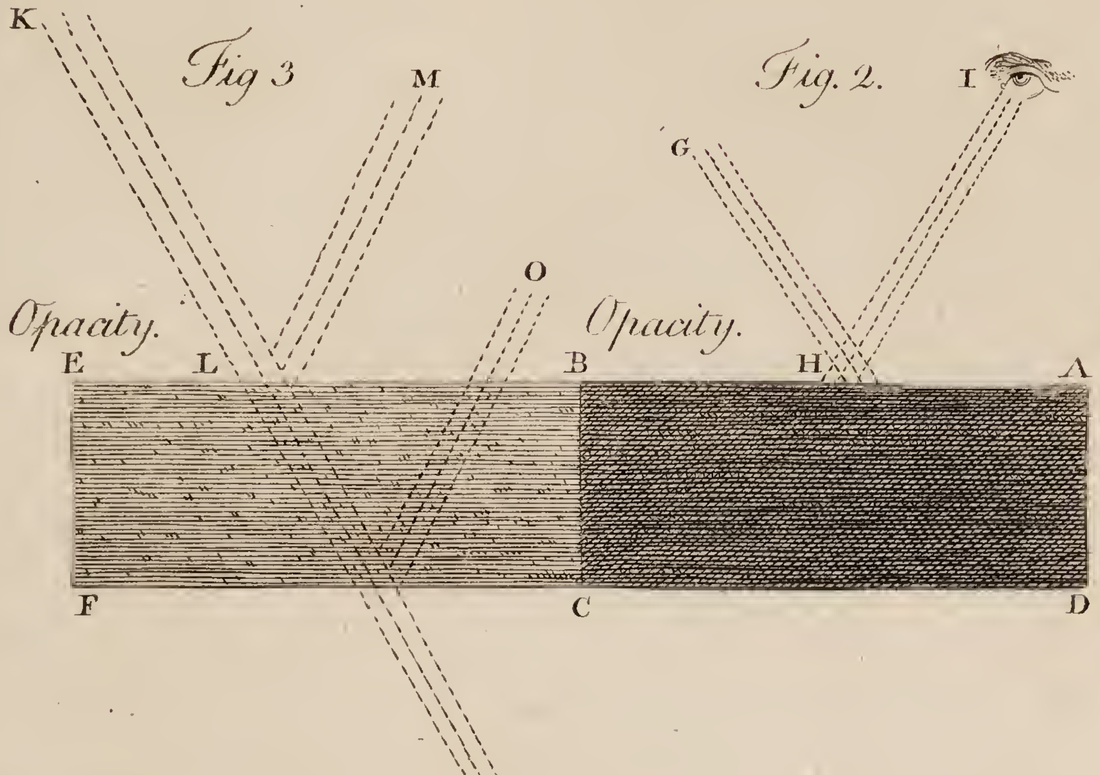


Fig 3
Opacity.

Fig. 2.
Opacity.

Optics.

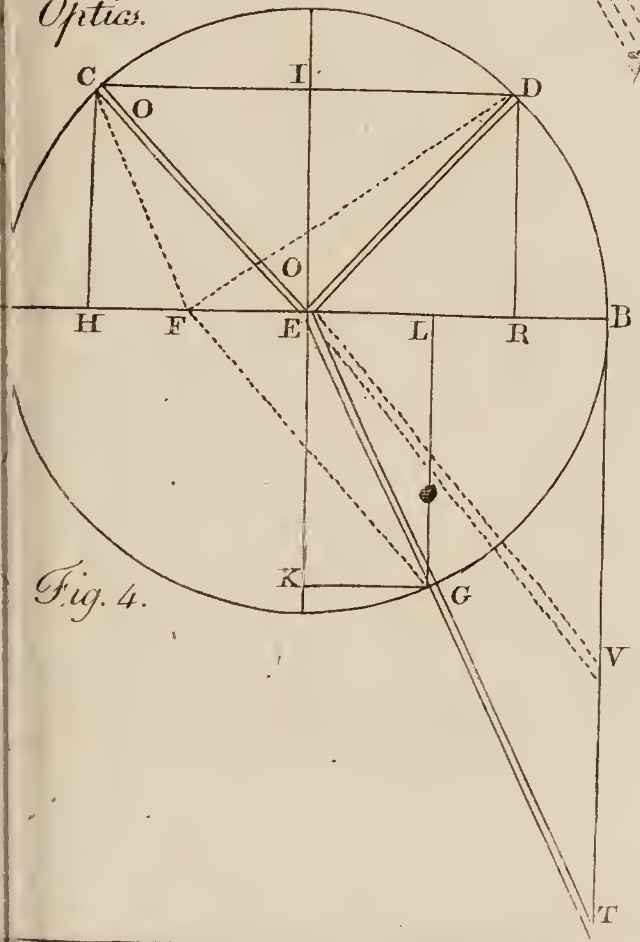
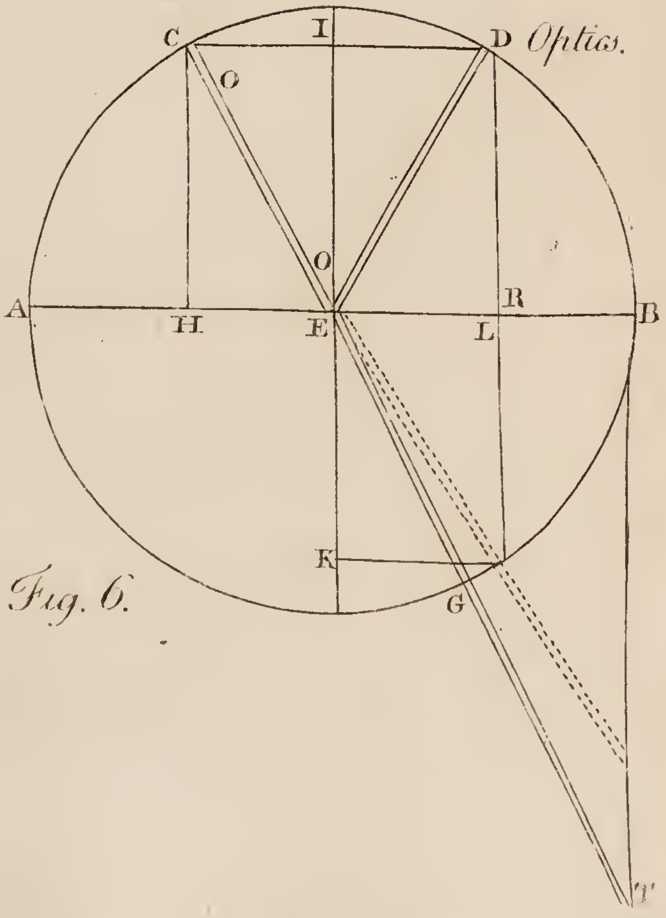


Fig. 4.



Optics.

Fig. 6.

this may be conceived of every point in the body, it is eaſy to underſtand how the whole becomes tranſparent. See *Reflection* and *Refraction*.

OPAL, in natural hiſtory, a gem of a very peculiar kind. It is ſofter than any other of the fine gems, and is difficult to poliſh to any degree of nicety. It is found of various ſhapes and ſizes; its moſt frequent bigneſs is between that of a pea and a horſe-bean, but it is found as ſmall as the head of a large pin, and has been ſeen of the ſize of a large walnut. Its figure is very various and uncertain, but it is never found in a cryſtalliform or columnar ſtate; its moſt uſual ſhape is an irregularly oblong one, convex above, flatted at bottom, and dented with various ſinuoſities at its ſides. It is often found among the looſe earth of mountains, ſometimes on the ſhores of rivers, and not unfrequently bedded in the coarſer kinds of jaſper. It is found in Egypt, Arabia, ſome parts of the Eaſt-Indies, and in many parts of Europe: thoſe of Europe are principally from Bohemia, and are of a greeniſh or greyiſh colour; the colour of other opals much reſembles the fineſt mother of pearl, its baſis ſeeming a bluiſh or greyiſh white, but with a property of reflecting all the colours of the rainbow, as turned differently to the light.

OPENING *of Trenches*, the firſt breaking of ground by the beſiegers, in order to carry on their approaches towards a place.

OPERA, a dramatic compoſition ſet to muſic, and ſung on the ſtage, accompanied with muſical inſtruments, and enriched with magnificent dreſſes, machines, and other decorations.

OPERATION, in general, the act of exerting or exerciſing ſome power or faculty, upon which an effect follows.

OPERATION, in chirurgery and medicine, a methodical action of the hand on the human body, in order to re-eſtabliſh health.

OPERATION, in chemiſtry, the proceſſes, or experiments, by means of which the proper changes are produced in bodies.

OPERATOR, one who performs an operation.

OPHITES, in natural hiſtory, a ſort of variegated marble, of a duſky-green ground, ſprinkled with ſpots of a lighter green, otherwiſe called ſerpentine.

OPHTHALMIA, in medicine, any diſorder or pain in the eye; but it is uſed ſtrictly to expreſs an inflammation of that organ. An opthalmia, ſays M. de St. Yves, is an inflammation of the conjunctiva, ſometimes attended with violent heat and a flux of tears; ſometimes without either heat or tears. This inflammation ſometimes extends all over the globe of the eye, and even to the adjacent parts. Of all diſorders of the eye, this is the moſt frequent, as it accompanies almoſt every diſeaſe to which the eye is ſubject. Some of theſe inflammations are without danger, and eaſily cured; others are very dangerous, and difficult to cure.

They are generally divided into the dry and humid.

The dry ſpecies of opthalmia brings a redneſs on the eye without tears, or any purulent matter. It occaſions no ſwelling of the eye-lid, nor pain in the eye, or in the head. It is cauſed by a thick blood, which ſtagnates only in ſome of the veſſels of the conjunctiva, only part of the white of the eye being red.

The humid opthalmia is produced by a great quantity of lachrymal lymph, which, as it paſſes continually over the globe of the eye, irritates the ſame by its acrimony, inflames it and the inner part of the eye-lids, which becomes ſwelled; it likewiſe often ulcerates the tranſparent part of the cornea. This diſeaſe is attended with ſhooting pains in the eye, and the patient cannot behold the light without intenſe pain. Children and old people are both ſubject to this diſeaſe, in whom it becomes very obſtinate, by reaſon of the natural moiſture of their temperament. When it runs to a length in children, their lips and noſes ſwell, and are covered with ſcabs and puſtules, that ſometimes overſpread the face.

For cure of the dry opthalmia waſh the inner part of the eye with collyrium, made of twelve grains of prepared tutty, diſſolved in two ounces of roſe and plantain waters, with the addition of a ſpoonful of ſpirit of wine. Take of Paul's betony, thyme, and red roſes, each a handful; two ſtalks of mullein; boil them in a gallon of wine; and at night apply to the eye a compreſs dipped in this wine.

As this ſpecies of opthalmia is not dongerous, it requires but few medicines, and is ſometimes cured by bleeding, repeated according to the plethoric conſtitution of the patient.

The cure of the humid opthalmia is ſometimes very difficult, and requires more medicines than the laſt, beſides ſuch repetitions of the general remedies, as the ſtate of the patient may require.

Bleeding at the neck and foot is often

neceſſary. Apply a collyrium, made with the diſtilled waters of fennel, eyebright, and plantain, of each two ounces, in which diſſolve two grains of ſalt of lead. Sometimes a ſeton, a cautery, and bliſters are obliged to be uſed. If the veſicatories incommode the kidnies or bladder, they muſt be laid aſide, and other means employed. If the firſt collyrium, which is deſigned only as a ſweetener, after ſome days, do not ſucceed, let another be ſubſtituted, which, by conſtringing the pores, will hinder the great afflux of tears to the eye; for which reaſon you may omit the ſalt of lead, and diſſolve, in the ſame waters, half a dram of the white troches of rhaſis.

OPIATES, medicines prepared with opium.

OPINION, the aſſent of the mind to propoſitions not evidently true at firſt; nor deduced, by neceſſary conſequences, from others that are ſo; but ſuch as carry the appearance of truth.

OPIUM, in pharmacy, a concrete gummy-reſinous juice; ſomewhat ſoft and tenacious, eſpecially when much handled or warmed; of a dark reddiſh brown colour in the maſs, and when reduced into powder yellow. It is brought from Egypt, Perſia, and ſome other parts of Aſia, in flat cakes or irregular maſſes, from four to about ſixteen ounces in weight, covered with leaves to prevent their ſticking together. It is extracted from the heads of white poppies, which in thoſe countries are cultivated in the fields for this uſe. Kæmpfer reports, that the heads, when almoſt ripe, are wounded with a five-edged inſtrument, by which as many parallel inciſions are made at once from top to bottom; that the juice which exudes is next day ſcraped off, and the other ſides of the heads wounded in like manner; and that the juice is afterwards worked with a little water, till it acquires the conſiſtence, tenacity, and brightneſs of the fineſt pitch. The beſt opium was formerly called Thebaic opium, from its being prepared about Thebes in Egypt; no diſtinction is now made in regard to the places of its production, though the epithet Thebaic ſerves to diſtinguiſh ſome of its officinal preparations. Opium has a faint diſagreeable ſmell, and a bitteriſh, hot, biting taſte. Watery tinctures of it ſtrike a black colour with chalybeate ſolutions and thus ſeem to diſcover ſome aſtringency. Mixed with the ſerum of blood, they thicken and render it whitiſh; and on blood itſelf, newly drawn, they have nearly a like effect. Mr. Eller obſerves, that on examining with a microſcope, blood thickened by a vinous tincture of opium, the nature of its globules ſeemed to be deſtroyed. But neither from theſe, nor any of the other known ſenſible properties of this drug, can its ſurpriſing operation in the human body be deduced. Taken in proper doſes, it commonly procures ſleep, and a temporary reſpite from pain or the action of any ſtimulating power. The cauſe of the pain it in many caſes confirms or augments; and in not a few, it fails even of giving palliative relief. The caſes in which it is proper or improper will be beſt underſtood from a view of its general effects; which, ſo far as experience has hitherto diſcovered them are the following. It renders the ſolids, while the operation of the opium continues, leſs ſenſible of every kind of irritation, whether proceeding from an internal cauſe, or from acrimonious medicines, as cantharides and the more active mercurials, of which it is the beſt corrector. It relaxes the nerves; abating or removing cramps or ſpaſms, even thoſe of the moſt violent kind; and increaſing paralytic diſorders and all debilities of the nervous ſyſtem. It incraſſates thin ſerous humours in the fauces and adjacent parts; by which means it proves frequently a ſpeedy cure for ſimple catarrhs and tickling coughs; but in phthiſical and peripneumonic caſes, dangerouſly obſtructs expectoration, unleſs this effect be provided againſt by ſuitable additions, as ammoniacum and ſquills. It produces a fullneſs and diſtenſion of the whole habit, and thus exaſperates inflammations both internal and external, and all plethoric ſymptoms. It promotes perſpiration and ſweat; but reſtrains all other evacuations, unleſs when they proceed from relaxation and inſenſibility of the parts, as the colliquative diarrhœa in the advanced ſtage of hectic fevers. It promotes labour-pains and delivery more effectually than the medicines of the ſtimulating kind uſually recommended for that purpoſe, partly perhaps by increaſing plenitude, and partly by relaxing the ſolids or taking off ſpaſmodic ſtrictures. And indeed all the preceding effects are perhaps conſequences of one general power; being nearly allied to thoſe which natural ſleep produces.

The operation of opium is generally accompanied with a ſlow but ſtrong and full pulſe, and a ſlight redneſs, heat, and itching of the ſkin: it is followed by a weak languid pulſe, lowneſs of ſpirits, ſome difficulty of breathing, or a ſenſe of tightneſs about the breaſt, a ſlight giddineſs of the head, dryneſs of the mouth and fauces, and ſome degree of nauſea. Given on a full ſtomach, it commonly occaſions a nauſea from the beginning, which continues till the opium is ejected along with the contents of the ſtomach. Where the evacuation of acrid humours, accumulated in the firſt paſſages, is ſuppreſſed by it, great ſickneſs and uneaſineſs are generally complained of, till the ſalutary diſcharge either takes place again ſpontaneouſly, or is promoted by art.

An over doſe occaſions either immoderate mirth or ſtupidity, a redneſs of the face, ſwelling of the lips, relaxation of the joints, vertigo, deep ſleep, with turbulent dreams and ſtartings, convulſions, and cold ſweats. Geoffroy obſerves, thoſe who recover, are generally relieved by a diarrhœa, or by a profuſe ſweat, which is accompanied with a violent itching. The proper remedies, beſides emetics, bliſters, and bleeding, are acids and neutral mixtures: Dr. Mead ſays he has given, with extraordinary ſucceſs, repeated doſes of a mixture of ſalt of wormwood with lemon juice.

A long continued uſe of opium is productive of great relaxation and debility, ſluggiſhneſs, heavineſs, loſs of appetite, dropſies, tremors, acrimony of the humours, frequent ſtimulus to urine, and propenſity to venery. On leaving it off, after habitual uſe, an extreme lowneſs of the ſpirits, languor, and anxiety, ſucceed; which are relieved by having again recourſe to opium, and in ſome meaſure by ſpirituous or vinous liquors.

With regard to the doſe, one grain is generally a ſufficient, and ſometimes too large a one: maniacal perſons, and thoſe who labour under violent ſpaſms, require oftentimes two, three, or more grains; though even in theſe caſes, it is generally more adviſable to repeat the doſe at proper intervals, than to enlarge it. By frequent uſe, much greater quantites may be borne; the Turks, who habituate themſelves to opium as a ſuccedaneum to ſpirituous liquors, are ſaid to take commonly a dram at a time, and Garcias ſays, that he knew one who every day took ten drams.

Tinctures of opium in water, wine, and proof ſpirit, have the ſame effects as the opium in ſubſtance; with this difference, that they exert themſelves ſooner in the body, and are leſs diſpoſed to leave a nauſea on the ſtomach.

Many have endeavoured to correct certain ill qualities which they ſuppoſe opium to be poſſeſſed of, by roaſting it, by fermentation, by long continued digeſtions, by repeated diſſolutions and diſtillations. Theſe kinds of proceſſes, though recommended by ſeveral late writers, do not promiſe any ſingular advantage. That they weaken the opium is indeed very probable; but this intention is anſwered as effectually, and with far greater certainty, by diminiſhing the doſe of the opium.

OPOBALSAMUM, in pharmacy, the ſame with the balſam, or balm of Gilead. See *Balſam*.

OPOPANAX, in the materia medica, a concrete gummy-reſinous juice, from the roots of an umbelliferous plant, which grows ſpontaneouſly in the warmer countries, and bears the cold of our own. The juice is brought from Turkey and the Eaſt Indies, ſometimes in little round drops or tears, more commonly in irregular lumps, of a reddiſh yellow colour on the outſide, with ſpecks of white, internally of a paler colour, and frequently variegated with large white pieces.

This gummy reſin has a ſtrong diſagreeable ſmell, and a bitter, acrid, ſomewhat nauſeous taſte.

OPOPANAX, an uſeful attenuant and deobſtruent, and in conſiderable doſes looſens the belly. It is given from a ſcruple to a dram, in the ſame intentions as ammoniacum or galbanum: and joined in ſmaller doſes as an auxiliary to thoſe and the other deobſtruent gums.

OPOSSUM, in zoology, a very ſingular animal, about fifteen inches long from the extremity of the noſe to the rump; and its tail is equal in length to the whole body: the legs are robuſt, and the feet armed with ſharp, long, and crooked claws. But what is moſt ſingular in this animal is, that the ſkin of the belly of the female is looſe, forming a kind of pouch or bag, with an aperture in it, at which, in time of danger, it takes in its young.

OPPONENT, one who withſtands or oppoſes another.

OPPOSITION, in logic, the diſagreement between propoſitions, which have the ſame ſubject and the ſame predicate.

OPPOSITION, in aſtronomy, is that aſpect or ſituation of two ſtars or planets, therefore retain unchanged both the celerity and direction of its horizontal motion; and the ſame ſpace of time it ſpent in coming from C H to I E, it will likewiſe ſpend in coming from E I to R D, ſuppoſing the intervals between C H and I E, as alſo between I E and R D, to be equal: but the perpendicular motion whereby it came from C I to H E, retaining its velocity, will be changed into the contrary direction, that it may ſpend as much time in which it may return from E R to I D. Since therefore E R is equal to E H, and R D to C H, the triangles C H E and D R E will be ſimilar and equal, and conſequently, the angle D E B will be equal to the angle C E A. All this will be more manifeſt, if we ſuppoſe the ruler C I D parallel to the ſurface A B, and retaining its paralleliſm through C H and D R to impinge on A B in H R, while in the mean time a ball in the ruler C I is carried from C to I; whence in reality the whole compound motion of the ball will be in the diagonal C E: but the ruler C I D reflected by the ſolid ſurface A B will return with the ſame celerity, and by the ſame way it came, and in an equal time will again come to C I D; while in the mean time the ball continuing its motion in the ruler, has advanced with the ſame celerity: and therefore in the ſame time arrives from I to D through I D = to C I; for the celerity remaining the ſame, equal ſpaces are run over in equal times: the ball, therefore, with a motion compounded of its own motion upon the ruler through I D, and that of the ruler along E I, to wit, returning from H R to C D, will be carried from E to D along the right line E D.

In order to explain refraction, we are to conſider that the greater reſiſting medium to light (yet without opacity) ſeems to be that which more obſtructs the diffuſion or diſtribution of light through more parts of the medium: and it may be called leſs illuminable; for the nature of light endeavours to diffuſe itſelf. On the contrary, by how much more the light equably affects the parts of the medium it illuminates, or communicates its force to a great number of ſmall particles of the illuminated place, the medium will be the more illuminable, and leſs reſiſt light: whence the more ſolid and ſmall the parts of the medium affected by light are, or the leſs ſpace they leave between them for another heterogeneous matter, not affected by light, the medium will be ſaid to be the more illuminated. But it appears from mechanical principles, that the ſame ſtroke impreſſed on ſeveral bodies at the ſame time, communicates a leſs force than if the ſtroke had been given to one of them: it will, therefore, happen, that in a medium which more reſiſts the diffuſion of light, or which is affected in a leſs number of its parts, each part is ſo much the more ſtrongly affected: in a more illuminable medium more parts are affected, but weaker and with a more languid impreſſed ſtroke. Aſſuming now the motion of the ball inſtead of the ray, and ſuppoſing the ball coming from G to E, there to impinge on a medium, which ſhall retard its celerity or impetus, ſuppoſe in a ſeſquialteral ratio. If, therefore, in a minute of time it comes from G to E in the former medium K E; in the new medium E I the ſmall ball will come from E to C in a minute and a half, ſuppoſing E C and G E to be equal in whatever point C is. But ſince the ſurface A B that ſeparates the mediums ſhall not oppoſe the horizontal celerity in G K, L E, and the parallels thereof upon the ball's firſt entering into the new medium E I, or in the very point E (for the horizontal motion L E H only grazes along the ſeparating ſurface A B) but in the firſt moment of its entering, or in the point E (conſidering the ball as indefinitely ſmall like a point, as rays themſelves are uſually conſidered without breadth) the inclination of the line C E is to be preſently determined. It is, therefore, to be taken at the very firſt; ſo that, in reſpect of the horizontal motion, the velocity may remain the ſame; and ſuch as it was aſſumed at the beginning of its ingreſs into the new medium, ſuch it remains therein: the ball, therefore, while it went in the former medium from G to E, had paſſed over in a minute of time with the horizontal direction the interval G K or L E (between G L and K E); it now in a minute and half of time, in which it ſhould move from E to C, will accompliſh in the ſame horizontal direction the interval E H, or I C (comprehended between E I and H C), which ought to be ſeſquialteral of the former L E, becauſe the horizontal velocity remaining the ſame, which is not changed by refraction, the ſpaces are as the times: E H, therefore, is to E L in the direct ratio of the times, or the reciprocal ratio of the celerities or reſiſtances; for we have ſhewn in the caſe of the light, whoſe diffuſion is impeded by the reſiſtance of the medium, that the velocity or impetus increaſes according to the reſiſtance, and languiſhes according to the greater facility of diffuſing itſelf in each part. On the contrary, that the ray recovers its force, and conſequently its direction, when again it comes into a medium where there is a leſs diffuſion, and more rays are employed in impelling a fewer number of parts; and this recovery Des Cartes, as we have mentioned before, could not explain by his compariſon of the tapeſtry, or any rough body.

Euclid has written on the ancient optics and catoptrics: dioptrics were unknown to them. F. Honorat. Fabri has an abridgement of optics, catoptrics, and dioptrics. Father Eſchinard has given a century of problems in optics. Vitellio and Alhazen have performed well on the element of optics. Father Kircher has a large volume on the ſecrets of optics, of light, and ſhadow, and their ſurpriſing effects, which paſs on the people for magic. We have alſo *L'Optique & Catoptrique* of father Merſenne, Paris 1641. *Dioptrique Oculaire* of father Cherubin, Paris 1651, fol. Chriſt. Sheineri *Optica*, London, 1652. Jacobi Gregorii *Optices*. Barrovii *Lectiones Opticæ*, London, 1665. John Bapt. Porta *de Refractione Optices*, London 1669. *Principe generale de l'Optique*, by M. Leibnitz; in the Leipſic Acts, 1682. *L'Occhiale all'Occhio*, or *Dioptrica Practica*, Carol. Ant. Mancini, Bologna, 1660, 4°. *Phyſico-matheſis de Lumine Coloribus, & Iride*, per F. Mar. Grimaldi, Bononiæ, 1665, 4°. *Cogitationes Phyſico-mechanicæ de Natura Viſionis*, per Joh. Ott. Scaphuſam, Heidel. 1670, 4°. And, which ought to be named firſt, the great Sir Iſaac Newton's Optics, Latin and Engliſh, 4° and 8°.

OPULUS, the water-elder, in botany, a genus of plants.

OPUNTIA, Indian fig, in botany, a ſpecies of cactus, diſtinguiſhed by being ramoſe and dichotomous.

It is on this plant that the cochineal animal feeds.

OR, in heraldry, denotes yellow, or gold colour. It is repreſented in engraving by ſmall points or dots, ſcattered all over the field or bearing.

ORACLE, among the heathens, the anſwer which the gods were ſuppoſed to give to thoſe who conſulted them upon any affair of importance; it is alſo uſed for the god who it was thought gave the anſwer, and the place where it was given. The credit of oracles was ſo great, that in all doubts and diſputes their determinations were held ſacred and inviolable; and no buſineſs of any conſequence was undertaken, ſcarce any peace concluded, any war waged, or any new form of government inſtituted, without the advice and approbation of ſome oracle. The anſwers were uſually given by the intervention of the prieſt or prieſteſs of the god who was conſulted, and generally expreſſed in ſuch dark and indeterminate phraſes, as might eaſily be wreſted to prove the truth of the oracle, whatever was the event. It is not, therefore, to be wondered at, that the prieſts who delivered them were in the higheſt credit and eſteem; and that they improved this reputation greatly to their advantage. They accordingly allowed no man to conſult the gods, before he had offered coſtly ſacrifices, and made rich preſents to them. And to keep up the veneration for their oracles, and to prevent their being taken unprepared, they admitted perſons to conſult the gods only at certain ſtated times; and ſometimes they were ſo cautious, that the greateſt perſons could obtain no anſwer at all. Thus Alexander himſelf was peremptorily denied by the pythia, or prieſteſs of Apollo, till ſhe was, by downright force, obliged to aſcend the tripos; when, being unable to reſiſt any longer, ſhe cried out, "Thou art invincible;" and theſe words were accepted inſtead of a farther oracle. The principal oracles of antiquity were, 1. The oracle of Dodona, where there was a temple conſecrated to Jupiter: the prieſts who delivered theſe oracles were called ſelli; but in later ages they were pronounced by three old women. Near the temple of Dodona was a ſacred grove of oaks, which were ſaid to be endued with a human voice, and a prophetical ſpirit; the reaſon of which fiction ſeems to have been, that the prieſts often concealed themſelves within the hollow of theſe trees, and from thence delivered oracles. 2. The oracle of Olympian Jupiter at Elis. 3. The oracle of Apollo at Delphi, where it was pretended that an inſpiring vapour aroſe from the mouth of a deep cavern, on which the pythia being placed on a three-legged ſtool, received the divine afflatus, and became inſpired: this oracle was the moſt famous of all others. 4. The oracle of Trophonius, at Lebadea, a city in Bœotia, at which, after a number of ceremonies were performed,

formed, the votary deſcended into Trophonius's cave, where future events were revealed to him in a very extraordinary manner. It is remarkable, that all who conſulted this oracle ſeemed to be frighted out of their ſenſes; for ſome time after, they became penſive and melancholy, their tempers were ſowered, and their countenances, however gay and pleaſant before, were rendered dull and heavy. 5. The oracle of Amphiarans, the anſwers of which were delivered in dreams, while the perſon ſlept on the ſkin of the victim he had ſacrificed. 6. That of Mercury, at Pharæ, a city of Achaia, where thoſe who wanted information, after offering frankincenſe upon the altar, and preſenting a piece of money, placed their ear to the ſtatue, and then ſtopping both ears till they were at ſome diſtance, took away their hands, and received the firſt voice they heard as a divine oracle. 7. The oracle of Hercules at Bura, where was a cave, in which was placed the ſtatue of Hercules: here they who conſulted the god, firſt addreſſed themſelves to him by prayer; then taking four dice out of a great heap that lay ready, they threw them upon the table, and as all the dice had particular marks, they were interpreted, and the anſwer given by conſulting a book kept for that purpoſe. 8. At Patræ, a city on the ſea-coaſt of Achaia, was a temple of Ceres, before which was a fountain which delivered oracles only on the event of diſeaſes, by letting down a looking-glaſs ſo low, that the bottom might juſt touch the ſurface of the water; when from the various figures repreſented in it, conjectures were formed concerning the patient. Beſides theſe, there were ſeveral others, as that of Æſculapius at Epidaurus, that of Bacchus at Amphiclea, that of Orpheus's head at Leſbos, &c.

ORAL, ſomething delivered by word of mouth; in which ſenſe we ſay, oral law, oral tradition, &c.

ORANGE, a delicious fruit of the apple kind, too well known to need deſcription.—This fine tree not being natural to our climate, we muſt quicken the nature of our ſoil with a compoſition that may cauſe it to correſpond as much as poſſible with the temperament of warmer countries. It delights greatly in a ſoil that is compoſed of an equal quantity of ſheep's dung, that has reſted two years; old compoſt, or the ſoil of a ſewer; and fat land taken either from a marſh or hemp-cloſe. Oranges are brought from ſeveral parts. The beſt and moſt in eſteem for a good taſte are thoſe which grow in hot countries; not only becauſe the ſoil of the places, having plenty of exalted ſulphur and volatile ſalts in it, communicates a great quantity of the ſame to theſe fruits, and gives them an agreeable ſmell, but becauſe the heat of the ſun there digeſts, and more completely ripens their juice, and gives them a more delicious taſte. The juice of the orange is ſharp, becauſe this ſalt is but little embarraſſed with the ropy parts; which is the reaſon it communicates almoſt all its acidity to the little nervous fibres of the tongue. As for the juice of the ſweet oranges, as it contains leſs ſalt than that of the ſour ones, and as this ſalt is kept under by a great quantity of oily parts, it is eaſy to be underſtood that it can make but a ſlight impreſſion on the parts it touches. They prefer the juice of the ſour orange in medicinal uſe to the other, as we have before obſerved, for cooling, moiſtening, and mitigating fevers; becauſe this juice has more of the acid in it, and can more eaſily thicken the over-thinned liquors, allay their violent motions, and keep down thoſe ſharp humours that throw them into an extraordinary fermentation.

ORANGERY, in gardening, a gallery expoſed to the ſouth, well cloſed with glaſs windows, to preſerve orange-trees in winter. It likewiſe denotes the parterre where the orange-trees are expoſed in kindly weather.

ORATION, in rhetoric, a ſpeech or harangue, compoſed according to the rules of oratory, and ſpoken in public.

ORATORIO, in the Italian muſic, a ſort of ſacred drama of dialogues; containing recitativos, duettos, trios, ritornellos, choruſes, &c. The ſubjects of theſe pieces are uſually taken from the ſcriptures.

ORATORY, *Oratoria*, the art of ſpeaking well, otherwiſe called rhetoric.

ORATORY, among the Romaniſts, a cloſet or ſmall apartment near a bedchamber, furniſhed with an altar, crucifix, &c. for private devotion.

ORB, *Orbis*, in aſtronomy, an hollow globe or ſphere. See *Globe* and *Sphere.*

ORBICULARE OS, in anatomy, a little bone of the ear, ſo called from its figure.

ORBICULARIS, in anatomy, an appellation given to the conſtrictor muſcle of the lips; as alſo to the conſtrictor of the upper eye-lid.

ORBIS MAGNUS, in aſtronomy, denotes the earth's orbit, in its annual revolution round the ſun.

ORBIT, *Orbita*, in aſtronomy, the path deſcribed by a planet about the ſun. The orbits of all the planets are ellipſes, having the ſun in their common focus; but the elliptic orbit of the earth, by the action of the moon, is ſenſibly disfigured, as alſo the orbit of Saturn by the action of Jupiter, when they are in conjunction.

ORCHARD, a ſeminary, or plantation of fruit-trees. It is a rule among gardeners, ſays Mr. Miller, that thoſe orchards thrive beſt which lie open to the ſouth, ſouth-weſt, and ſouth-eaſt, being ſcreened from the north, and have the ſoil dry and deep.

In planting of an orchard, great care ſhould be had to the nature of the ſoil, that ſuch trees as are adapted to grow upon the ground intended to be planted, may be choſen, otherwiſe there can be little hopes of their ſucceeding; and it is for want of rightly obſerving this method, that we ſee, in many countries, orchards planted which never arrive to any tolerable degree of perfection, their trees ſtarving, and their bodies either covered with moſs, or the bark cracks and divides; both which are evident ſigns of the weakneſs of the trees; whereas, if inſtead of apples the orchard had been planted with pears, cherries, or any other ſort of fruit to which the ſoil had been adapted, the trees might have grown very well, and produced great quantities of fruit.

As to the poſition of the orchard, if you are at full liberty to chuſe, a riſing ground, open to the ſouth-eaſt, is to be preferred; but I would by no means adviſe to plant upon the ſide of an hill where the declivity is very great; for in ſuch places the great rains commonly waſh down the better part of the ground. whereby the trees would be deprived of proper nouriſhment; but where the riſe is gentle, it is of great advantage to the trees, by admitting the ſun and air between them, better than it can upon an entire level; which is an exceeding benefit to the fruit, by diſſipating fogs, and drying up the damps, which, when detained amongſt the trees, mix with the air, and render it rancid: if it be defended from the weſt, north, and eaſt winds, it will alſo render this ſituation full more advantageous; for it is chiefly from theſe quarters that fruit-trees receive the greateſt injury: therefore, if the place be not naturally defended from theſe by riſing hills, which is always to be preferred, then you ſhould plant large growing timber-trees at ſome diſtance from the orchard, to anſwer this purpoſe.

You ſhould alſo have a great regard to the diſtance of planting the trees, which is what few people have rightly conſidered; for if you plant them too cloſe, they will be liable to blights; and the air being hereby pent in amongſt them, will cauſe the fruit to be ill-taſted, having a great quantity of damp vapours from the perſpiration of the trees, and the exhalations from the earth mixed with it, which will be imbibed by the fruit, and render their juices crude and unwholeſome.

Wherefore I cannot but recommend the method which has been lately practiſed by ſome particular gentlemen with very great ſucceſs; and that is, to plant the trees fourſcore feet aſunder, but not in regular rows. The ground between the trees they plough and ſow with wheat and other crops, in the ſame manner as if it were clear from trees; and they obſerve their crops to be full as good as thoſe quite expoſed, except juſt under each tree, when they are grown large, and afford a great ſhade; and, by thus ploughing and tilling the ground, the trees are rendered more vigorous and healthy, ſcarcely ever having any moſs, or other marks of poverty, and will abide much longer, and produce better fruit.

If the ground in which you intend to plant an orchard has been paſture for ſome years, then you ſhould plough in the green ſward the ſpring before you plant the trees: and, if you will permit it to lie a ſummer fallow, it will greatly mend it, provided you ſtir it two or three times, to rot the ſward of graſs, and prevent weeds growing thereon.

At Michaelmas you ſhould plough it pretty deep, in order to make it looſe for the roots of the trees, which ſhould be planted thereon in October, provided the ſoil be dry; but if it be moiſt, the beginning of March will be a better ſeaſon.

When you have finiſhed planting the trees, you ſhould provide ſome ſtakes to ſupport them, otherwiſe the wind will blow them out of the ground; which will do them much injury, eſpecially if they have been planted ſome time; for the ground at that ſeaſon being warm, and for the moſt part moiſt, the trees will very ſoon puſh out a great number of young fibres; which, if broken off by their being diſplaced, will greatly retard the growth of them.

In the ſpring following, if the ſeaſon ſhould prove dry, you ſhould cut a quantity of green turf, which muſt be laid upon the ſurface of the ground about their roots, turning the graſs downward; which will prevent the ſun and wind from drying the ground, whereby a great expence of watering will be ſaved: and, after the firſt year, they will be out of danger, provided they have taken well.

Whenever you plough the ground between theſe trees, you muſt be careful not to go too deep among their roots, leſt you ſhould cut them off, which would greatly damage the trees: but, if you do it cautiouſly, the ſtirring of the ſurface of the ground will be of great benefit to them; though you ſhould obſerve never to ſow too near the trees, nor ſuffer any great rooting weeds to grow about them, which would exhauſt the goodneſs of the ſoil, and ſtarve them.

If, after the turf which was laid round the trees be rooted, you dig it in gently about the roots, it will greatly encourage them. There are ſome perſons who plant many ſorts of fruit together in the ſame orchard, mixing the trees alternately; but this is a method which ſhould always be avoided; for hereby there will be a very great difference in the growth of the trees, which will not only render them unſightly, but alſo the fruit upon the lower trees ill-taſted, by the tall ones overſhadowing them; ſo that, if you are determined to plant ſeveral ſorts of fruit on the ſame ſpot, you ſhould obſerve to place the largeſt growing trees backwards, and ſo proceed to thoſe of leſs growth. continuing the ſame method quite through the whole plantation; whereby it will appear at a diſtance in a regular ſlope, and the ſun and air will more equally paſs through the whole orchard, that every tree may have an equal benefit therefrom.

The ſoil of your orchard ſhould alſo be mended once in two or three years with dung, or other manure, which will alſo be abſolutely neceſſary for the crops ſown between; ſo that where perſons are not inclinable to help their orchard, where the expence of manure is pretty great, yet, as there is a crop expected from the ground beſides the fruit, they will the more readily be at the charge upon that account.

In making choice of trees for an orchard, you ſhould always obſerve to procure them from a ſoil nearly a-kin to that where they are to be planted, or rather poorer; for, if you have them from a very rich ſoil, and that wherein you plant them is but indifferent, they will not thrive well, eſpecially for four or five years after planting; ſo that it is a very wrong practice to make the nurſery, where young trees are raiſed, very rich, when the trees are deſigned for a middling or poor ſoil. The trees ſhould alſo be young and thriving; for, whatever ſome perſons may adviſe to the contrary, yet it has always been obſerved, that though large trees may grow, and produce fruit, after being removed, they never make ſo good trees, nor are ſo long-lived, as thoſe which are planted while young.

Theſe trees, after they are planted out, will require no other pruning but only to cut out dead branches, or ſuch as croſs each other, ſo as to render their heads confuſed and unſightly: the too often pruning them, or ſhortening their branches, is very injurious, eſpecially to cherries and ſtone-fruit, which will gum prodigiouſly, and decay in ſuch places where they are cut: and the apples and pears which are not of ſo nice a nature, will produce a greater quantity of lateral branches, which will fill the heads of the trees with weak ſhoots, whenever their branches are thus ſhortened; and many times the fruit is hereby cut off, which, on many ſorts of fruit-trees, is firſt produced at the extremity of their ſhoot.

It may, perhaps, ſeem ſtrange to ſome perſons, that I ſhould recommend the allowing ſo much diſtance to the trees in an orchard, becauſe a ſmall piece of ground will admit of very few trees, when planted in this method: but they will pleaſe to obſerve, that when the trees are grown up, they will produce a great deal more fruit than twice the number when planted cloſe, and will be vaſtly better taſted; the trees, when placed at a large diſtance, being never ſo much in danger of blighting as in cloſe plantations, as hath been obſerved in Herefordſhire, the great county for orchards, where they find that when orchards are ſo planted or ſituated, that the air is pent up amongſt the trees, the vapours which riſe from the damp of the ground, and the perſpiration of the trees, collect the heat of the ſun, and reflect it in ſteams ſo as to cauſe what they call a fire-

Fig. 1 Rustic.

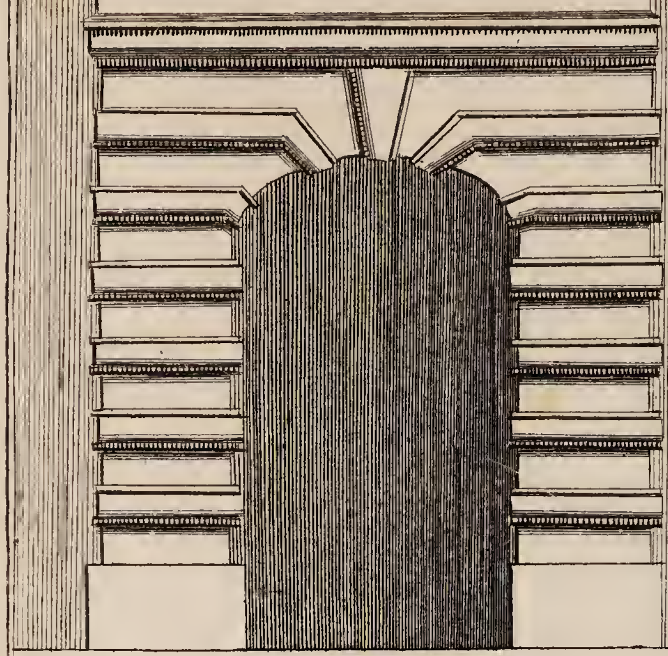


Fig. 2. Tuscan.

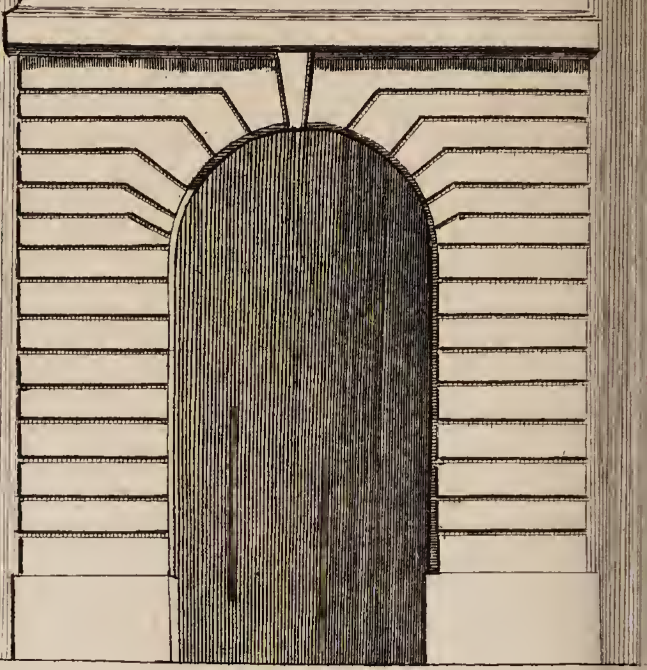


Fig. 3. Doric.

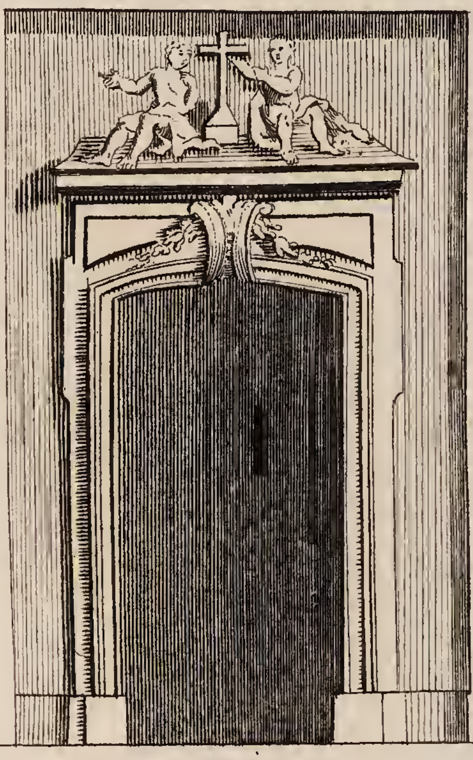


Fig. 4. Ionic.

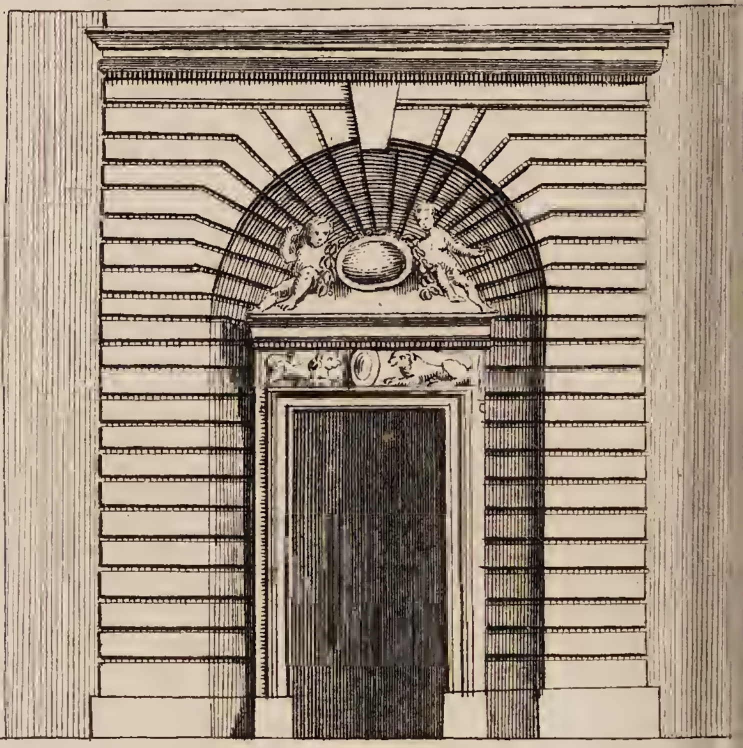


Fig. 5. Corinthian.

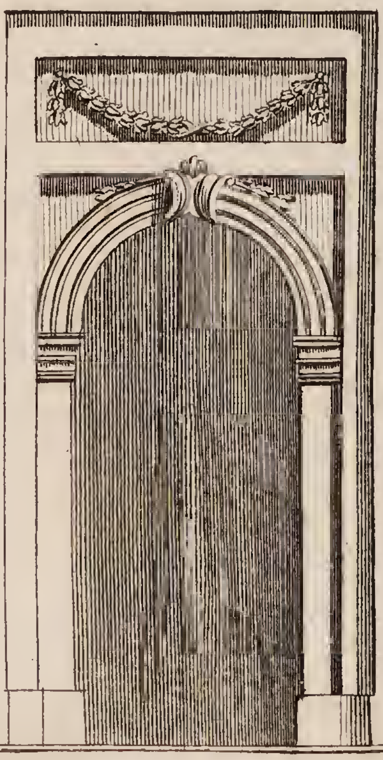
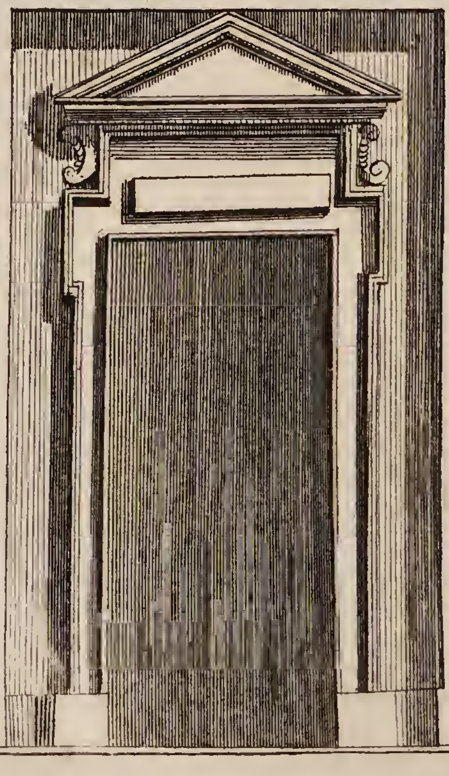


Fig. 6. Composite.



blaſt, which is the moſt hurtful to their fruit; and this is moſt frequent where the orchards are open to the ſouth ſun.

But, as orchards ſhould never be planted, unleſs where large quantities of fruit are deſired, ſo it will be the ſame thing to allow twice or three times the quantity of ground; ſince there may be a crop of grain of any ſort upon the ſame place, as was before ſaid, ſo that there is no loſs of ground: and, for a family only, it is hardly worth while to plant an orchard, ſince a kitchen-garden well planted with eſpaliers will afford more fruit than can be eaten while good, eſpecially if the kitchen-garden be proportioned to the largeneſs of the family: and, if cyder be required, there may be a large avenue of apple-trees extended croſs a neighbouring field, which will render it pleaſant, and produce a great quantity of fruit; or there may be ſome ſingle rows of trees planted to ſurround the fields, &c. which will fully anſwer the ſame purpoſe, and be leſs liable to the fire-blaſts before-mentioned. *Miller's Gard. Dict.*

ORCHESTRA, in the ancient theatres, a place in the form of a ſemi-circle, where the dancing was performed; and, in the modern theatres, &c. where the muſic, both vocal and inſtrumental, is performed.

ORCHIS, fool's ſtones, in botany, a genus of plants. Orchis root abounds with a glutinous juice, good for blunting acrid ſerous humours.

ORDEAL, a form of trial formerly practiſed over almoſt all Europe, and which prevailed in England from the time of Edward the Confeſſor, till it was aboliſhed by a declaration of Henry III. It was called *purgatio vulgaris*, or *judicium*, in oppoſition to *bellum*, or combat, the other form of purgation, and was of various kinds, as that of fire, that of red-hot iron, that of water, that of judicial pottage, that of hallowed cheeſe, that of the green croſs, and that of dice laid on relics covered with a woollen cloth. To each of which kinds particular maſſes were appointed. In England, an offender, on being arraigned, and pleading not guilty, had it in his choice to put himſelf upon God and his country; that is, upon the verdict of a jury; or upon God alone, on which account it was called the judgment of God, it being preſumed that God would deliver the innocent. The more popular kinds of ordeal were thoſe of red-hot iron and water; the firſt for freemen and people of faſhion, and the laſt for peaſants. That by fire, as practiſed here, was the perſon's walking barefooted and blindfold over nine red-hot plough-ſhares; and if he eſcaped unhurt, he was acquitted, otherwiſe condemned. That of water was of two kinds, viz. either of hot water or cold; the former was where the perſon ſuſpected put his arm or leg into ſcalding water, and brought it out unhurt; and the latter was when his body was not, contrary to the courſe of nature, borne up by the water.

ORDER, in architecture, a ſyſtem of the ſeveral members, ornaments, and proportions of columns and pilaſters; or a regular arrangement of the projecting parts of a building, eſpecially the column, ſo as to form one beautiful whole.

M. Le Clerc defines an order to be a column charged with an entablature, and ſupported on a pedeſtal. The origin of orders may be ſaid to be almoſt as ancient as human ſociety. The rigour of the ſeaſons firſt put men upon making little cabbins to retire into: at the firſt they were made half under ground, and half above, and were covered with ſtubble; but, in time growing more expert, they placed trunks of trees on end, and laid others a-croſs, to bear up the covering. From hence they took the hint of more regular architecture, the trunks of trees upright repreſenting columns; and the girds or bands which ſerved to keep the trunks from burſting, expreſſed baſes and capitals; and the ſummers which lay a-croſs, gave the hint of entablatures; and likewiſe, the coverings, ending in points, gave a notion of pediments. This hypotheſis we have from Vitruvius, and it has been well illuſtrated by M. Blondel. See *Column*, &c. Others are of opinion, that columns take their riſe from the pyramids which were erected by the ancients over tombs; and that the urns wherein their aſhes were incloſed, repreſented the capitals, the abacus of which was a brick laid over to cover the urn: but Vitruvius's account ſeems the moſt natural. See *Abacus*, &c. In time, the height of columns was regulated by the Greeks on the foot of the proportion of a human body. The Doric repreſented a man of a ſtrong robuſt make, the Ionic that of a woman, and the Corinthian that of a girl; their baſes and capitals were their ſhoes, head-dreſs, &c. The three Greek orders repreſent three different manners of building, viz. the ſolid, mean, and delicate; the two Italian ones are imperfect productions of theſe.

To give a general idea of the orders, it will be neceſſary to obſerve, that the whole is compoſed of two parts, at leaſt, viz. the column and the entablature, and of four parts, at the moſt, where there is a pedeſtal under the column, and one acroter, or little pedeſtal, on the top of the entablature. That the column has three parts, viz. the baſe. the ſhaft, and capital; the entablature has three likewiſe, viz the architrave, the frieze, and the corniche; which parts are all different in the ſeveral orders, having each their particular characters and members, called by the general names of mouldings or ornaments. See *Baſe*, &c.

Theſe orders took their names from the people among whom they were invented. Scamozzi calls the Tuſcan, the gigantic; the Doric, the Herculean; the Ionic, the matronal; the Compoſite, the heroic; and the Corinthian, the virginal.

An order of columns is uſually underſtood of a column bearing its entablature; but the order is ſcarcely complete, except the column be raiſed on a pedeſtal.

The pedeſtal, column, and entablature, are three compound parts, each conſiſting of three others, as has been ſaid before.

The ancients have given us five ſeveral orders of columns, the Tuſcan, Doric, Ionic, Compoſite, and Corinthian.

We have already given a plate of the five orders, and ſhall here add one of doors adapted to the different orders. See plate xxxviii. where *fig*. 1. is a door according to the Ruſtic taſte. *Fig*. 2. A door of the Tuſcan order. *Fig*. 3. A door of the Doric order. *Fig*. 4. A door of the Ionic order. *Fig* 5. A door of the Corinthian order; and *fig*. 6. a door of the Compoſite order.

Diſpoſition of the ORDERS. Theſe ought to be ſo diſpoſed in building, that the moſt ſolid may be placed undermoſt, as the moſt proper to ſuſtain the weight, and to give the whole edifice a more firm foundation: therefore the Doric muſt always be placed under the Ionic, the Ionic under the Corinthian, and the Corinthian under the Compoſite. As to the Tuſcan, being a plain rude order, it is ſeldom uſed above ground except in villas, where one order only is employed. In very large buildings, as amphitheatres, where many orders are required, the Tuſcan may be placed under the Ionic inſtead of the Doric. But if you are deſirous to leave out any of theſe orders, as for inſtance, to place the Corinthian immediately over the Doric, you may, provided you always obſerve to place the moſt ſtrong and ſolid undermoſt, for the reaſons above-mentioned.

ORDER, a diviſion or claſs of any thing: thus, the tribe of animals called birds, is ſubdivided into ſix orders.

Holy ORDERS, a character peculiar to eccleſiaſtics, whereby they are ſet apart for the miniſtry.

Military ORDERS, companies of knights, inſtituted by kings and princes; either for defence of the faith, or to confer marks of honour, and make diſtinctions among their ſubjects.

Religious ORDERS, congregations or ſocieties of monaſtics, living under the ſame ſuperior, and wearing the ſame habit.

ORDERS *of Curves*, in geometry. See *Curve*.

ORDINANCE, or ORDONNANCE, a law, ſtatute, or command of a ſovereign, or ſuperior.

ORDINARY, in general, ſignifies common, or uſual; thus, an ambaſſador or envoy in ordinary, is one ſent to reſide ſtatedly, and for a number of years, in the court of ſome foreign prince or ſtate, in order to keep up a good underſtanding, and watch over the intereſt of his own nation. This term is alſo applied to ſeveral officers in the king's houſhold, who attend on common occaſions, Thus we ſay, phyſician in ordinary, &c.

ORDINARY, in civil law, any judge inveſted with authority to take cognizance of cauſes in his own right, and not by deputation.

ORDINARY, in common and canon law, one who has ordinary or immediate juriſdiction in eccleſiaſtical cauſes in ſuch a place.

ORDINARY, or *Honourable* ORDINARY, in heraldry, a denomination given to certain charges properly belonging to that art. The honourable ordinaries are ten in number, viz. the chief, pale, bend, feſſe, bar, croſs, ſaltier, chevron, bordure, and orle.

ORDINATES, or ORDINATE APPLICATES, in geometry, parallel lines, terminating in a curve, and biſſected by a diameter. The half of theſe is properly the ſemi-ordinate, though commonly called ordinate.

ORDINATION, the act of conferring holy orders, or of initiating a perſon

ſon into the prieſthood. Ordination has always been eſteemed the principal prerogative of biſhops, and they ſtill retain the function as a mark of ſpiritual ſovereignty in their dioceſe. Without ordination, no perſon can receive any benefice, parſonage, vicarage, &c. A clerk muſt be twenty-three years of age before he can have any ſhare in the miniſtry; and twenty-four, before he can be ordained prieſt, and by that means be permitted to adminiſter the ſacraments. A biſhop, on the ordination of clergymen, is to examine them in the preſence of the miniſters who aſſiſt him at the impoſition of hands; and in caſe any crime, as drunkenneſs, perjury, forgery, &c. be alledged againſt any one that is to be ordained, either prieſt or deacon, the biſhop ought to deſiſt from ordaining him. The perſon to be ordained is to bring a teſtimonial of his life and doctrine to the biſhop, and give an account of his faith in Latin; and both prieſts and deacons are obliged to ſubſcribe the Thirty-nine Articles.

ORDNANCE, a general name for all ſorts of great guns uſed in war. See *Cannon* and *Gun*.

ORDONNANCE, or ORDINANCE, in painting, is uſed for the diſpoſition of the parts of a picture, either reſpecting the whole piece, or to the ſeveral parts; as the groups, maſſes, contraſts, aſpects, &c.

ORE, in natural hiſtory, the mineral glebe, earth, or ſtone dug out of the mines, to be purified, and have the metalline particles ſeparated from it.

ORGAN, *αργανον*, in general, an inſtrument, or machine deſigned for the production of ſome certain action or operation; in which ſenſe, the mechanic powers, machines, and even the veins, arteries, nerves, muſcles, and bones of the human body, may be called organs. The organs of ſenſe are thoſe parts of the body, by which we receive the impreſſions or ideas of external objects; being commonly reckoned five, viz. the eye, ear, noſe, palate, and cutis.

ORGAN, in muſic, the largeſt and moſt harmonious wind-inſtrument, and is become common in churches.

The invention of the organ is very ancient, though it is agreed that it was very little uſed till the eighth century. It ſeems to have been borrowed from the Greeks. Vitruvius deſcribes an hydraulic one in his tenth book of Architecture.

St. Jerome mentions one with twelve pair of bellows, which might be heard a thouſand paces, or a mile; and another at Jeruſalem, which might be heard at the mount of Olives.

There is one in the cathedral church of Ulm, in Germany, that is ninety-three feet high; and twenty-eight broad; the largeſt pipe is thirteen inches in diameter, and it has ſixteen pair of bellows.

Hydraulic ORGAN, a muſical machine that plays by means of water inſtead of wind. Of theſe there are ſeveral in Italy in the grottos of vineyards.

ORGANICAL *Part*, that part of an animal, or plant, deſtined for the performance of ſome particular function.

ORGASM, *Orgaſmus*, an extacy, or impetuous deſire of coition, occaſioned by a turgeſcency of the ſeminal veſſels.

ORGIA, *οργια*, in antiquity, feaſts and ſacrifices performed in honour of Bacchus, inſtituted by Orpheus, and chiefly celebrated on the mountains by wild, diſtracted women, called Bacchæ.

ORGUES, in the military art, thick, long pieces of wood pointed at one end, and ſhod with iron, clear one of another; hanging each by a particular rope, or cord, over the gate-way of a ſtrong place, perpendicularly, to be let fall in caſe of an enemy.

ORGUES is alſo uſed for a machine, compoſed of ſeveral harquebuſſes on muſquet-barrels, bound together, by means whereof ſeveral exploſions are made at the ſame time, uſed to defend breaches and other places attacked.

ORIENTAL, ſituated towards the eaſt, with regard to us, in oppoſition to occidental.

ORIFICE, the mouth or aperture of a tube, pipe, or other cavity. In anatomy, this term is particularly applied to the mouths of the ſeveral ducts, veſſels, and other cavities, as of the bladder, uterus, ſtomach, &c.

It is alſo uſed for the aperture of a wound or ulcer.

ORIGANUM, wild marjoram, in botany. It grows wild on dry chalky hills and gravelly grounds, in ſeveral parts of England, and flowers in June. The flowers, or rather flowery tops, of a ſomewhat different ſpecies, *origanum Creticum*, were formerly brought from Candy, but have long given place to thoſe of our own growth, which are nearly of the ſame quality. The leaves and flowery tops of origanum have an agreeable aromatic ſmell, and a pungent taſte, warmer than that of the garden marjoram, and much reſembling thyme; with which they appear to agree in medicinal virtue. Infuſions of them are ſometimes drank as tea, in weakneſs of the ſtomach, diſorders of the breaſt for promoting perſpiration and the fluid ſecretions in general; they are ſometimes uſed alſo in nervine and anti-rheumatic baths; and the powder of the dried herb as an errhine. Diſtilled with water, they yield a moderate quantity of a very acrid penetrating eſſential oil, ſmelling ſtrongly of the origanum, but leſs agreeable than the herb itſelf; this oil is applied on a little cotton for eaſing the pains of carious teeth; and ſometimes diluted and rubbed on the noſtrils, or ſnuffed up the noſe, for attenuating and evacuating mucous humours.

ORIGINAL, a firſt draught or deſign of any thing, which ſerves as a model.

ORIGINAL SIN, the crime of eating the forbidden fruit, of which it is ſaid, all mankind are guilty at their conception, by the imputation of Adam's tranſgreſſion; which is accounted for by ſuppoſing that Adam, as he was to be the father, was alſo the repreſentative of the whole human race; and that on his ſinning, all that were to ſpring from him partook of his crime.

ORILLON, in fortification, a ſmall rounding of earth faced with a wall; raiſed on the ſhoulder of thoſe baſtions that have caſe-mates, to cover the cannon in the retired flank, and prevent their being diſmounted by the enemy.

ORION, in aſtronomy, a conſtellation of the ſouthern hemiſphere; conſiſting of thirty-ſeven ſtars, according to Ptolemy; of ſixty-two, according to Tycho; and of no leſs than eighty, in the Britannic catalogue.

* ORLEANS, a large city of France, and capital of the Orleanois, with a univerſity for the ſtudy of the law. It is one of the largeſt and moſt pleaſant cities in the kingdom. It has ſix gates beſides four poſterns. The ſtreets are ſmall and narrow, except ſome few which are ſtrait; but the principal ſtreet is broad as well as long. There are four large ſquares, including the market-place, and the cathedral is one of the fineſt in the kingdom. There are twenty-two pariſhes. The bridge of Orleans is built with ſtone in a handſome manner, and has 16 arches, which terminate at the ſuburb. On this bridge is a ſtatue of the Virgin Mary in bronze, holding her ſon in her arms, who is ſuppoſed to be juſt going to be laid in the ſepulchre; on the one ſide is Charles VII. in armour on his knees, and on the other the Maid of Orleans, dreſſed like a man, and in armour. They every year make a feaſt to the memory of that heroine on the 12th of May, at which time they march in a ſolemn proceſſion. The city of Orleans was beſieged by the Engliſh in 1429, when Joan of Arc drove them away. It has ſuffered much in the religious wars. It is 32 miles N. E. of Blois, 60 N. E. of Tours, and 67 S. E. of Paris. Long. 2. 16. E. Lat. 47. 50 N.

ORNAMENTS, in architecture, are uſed to ſignify all the ſculpture or carved-work wherewith a piece of architecture is enriched.

Vitruvius and Vignola alſo uſe the word to ſignify the entablature.

ORNITHOLOGY, that branch of zoology which treats of birds.

Linnæus arranges the whole claſs of birds under ſix orders, according to the different figures of their beaks, viz.

1. The accipitres, or birds with uncinated or hooked beaks.

2. The picæ, or birds that have convex and compreſſed beaks.

3. The anſeres, comprehending ſuch birds as have depreſſed, and dentated or ſerrated beaks.

4. The ſcolopaces, or thoſe furniſhed with ſubcylindric and obtuſe beaks.

5. The gallinæ, or birds which have the beak of a conic form, but crooked, and the upper chap imbricated.

6. The paſſeres, or birds with conic and ſharp-pointed beaks.

In the deſcription of birds, the feet, wings, and tail, are chiefly attended to.

In moſt birds the toes are four in number, three ſtanding forwards and one backwards. In ſome two toes ſtand forward, and two backward. Some feet, again, are palmated, or have the toes connected together by a membrane, and others ſemi-palmated.

With regard to the wings, the long-quill-feathers are called by authors remiges, as ſerving to fly with; and the other feathers, placed over the reſt of the body, tectrices. The long feathers of the tail are called rectrices, as ſerving to ſteer the bird's courſe through the air.

As to the other terms made uſe of in the deſcription of birds, they are theſe: cera expreſſes the membrane or naked tunic, which ſurrounds and extends itſelf over more or leſs of the baſe of the beak: urrhopigium is the rump; and as to other terms, they will be found explained under their ſeveral heads

Fig. 1. Orrery

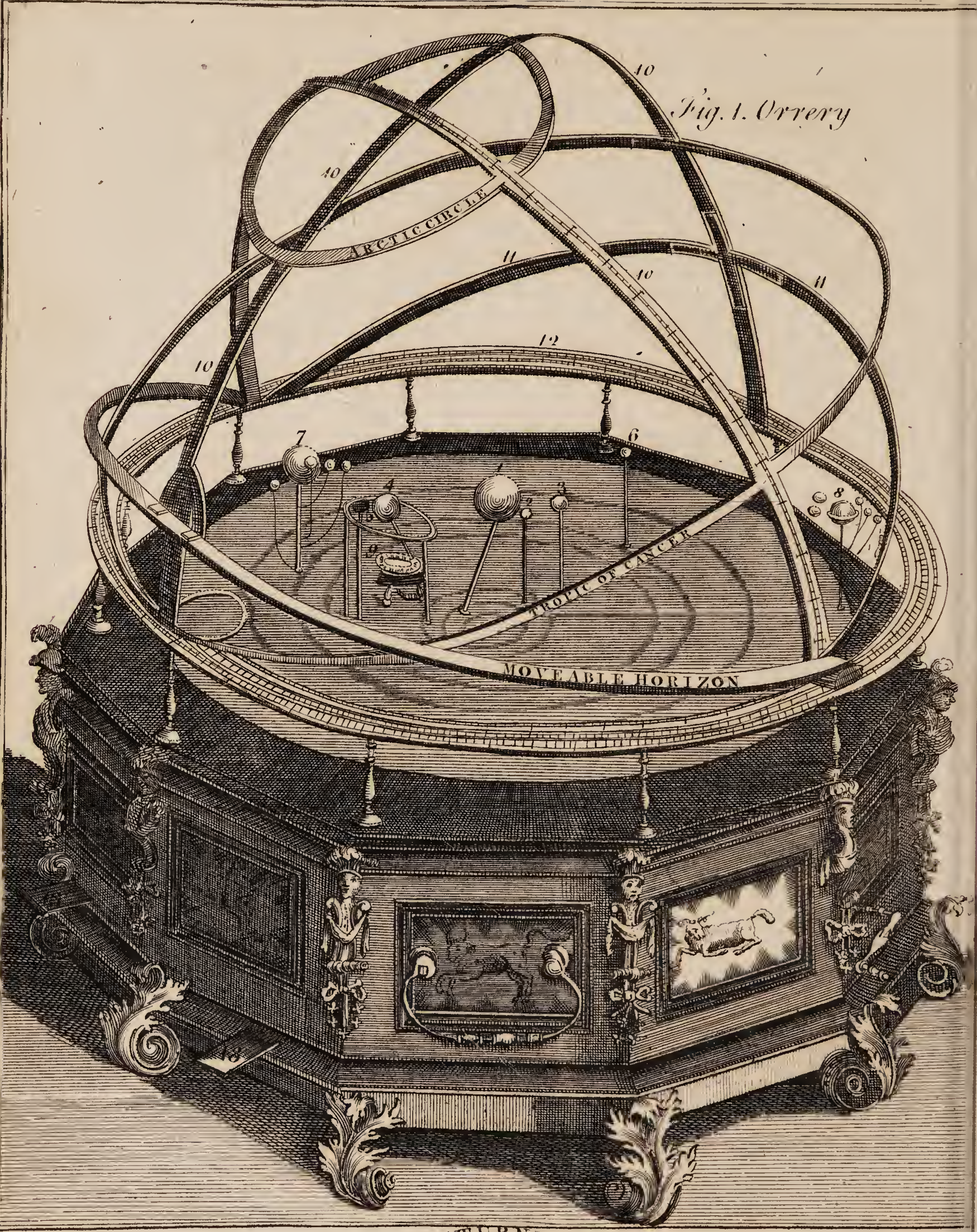
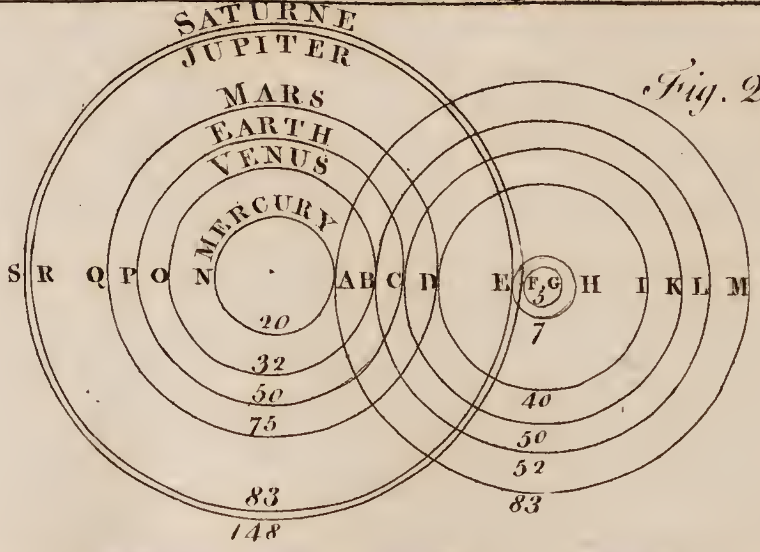


Fig. 2. Orrery



OROBUS, bitter vetch, in botany, it agrees in virtues with ervum. See the article *Ervum*.

ORPHAN, a fatherleſs child, or minor; or one that is deprived both of father and mother.

* ORPHEUS, in fabulous hiſtory, the Son of Apollo, by the Muſe Calliope, and was born in Thrace. He was ſo excellent a muſician, that at the ſound of his voice and lyre the waves ſtopt their courſe, the rocks moved, and the moſt ſavage beaſts were tamed. He married Eurydice, a princeſs of that country, but Ariſteus, a neighbouring prince, falling in love with her, ſhe, in flying to eſcape his violence, was killed by the bite of a ſerpent. The diſconſolate Orpheus deſcended to hell in order to recover her, when Pluto and Proſerpine were ſo touched by his harmony, as to permit him to take back his wife, on condition that he ſhould not look back upon her till they came to the light of the world; but his impatient fondneſs having made him turn his head, his dear Eurydice was taken for ever from him. From that time he diſregarded the whole ſex, which ſo enraged the Thracian women, that they tore him to pieces. After his death the Muſes took care of his body, and his lyre was tranſported to the ſkies, where it forms one of the conſtellations.

ORPIMENT, *Auripigmentum*, in natural hiſtory, a beautiful foſſile, ſo called from its being uſed as a gold coloured pigment.

Orpiment is a native foſſile, found chiefly in Turky and Natolia. Some is met with alſo in Bohemia, Hungary, and Luſatia near Sorau, but inferior in goodneſs to that of Turky. The beſt ſort is of a lively gold-yellow and green colour, here and there intermixed with pieces of vermilion red; of a ſhattery foliaceous texture, ſomewhat flexible, ſoft to the touch like talc, and ſparkling when broke. The inferior kinds are of a dead yellow. inclining more to greeniſh; and want the ſparkling appearance of the foregoing.

The principal uſe of orpiment is as a colouring drug, among the painters, book-binders, &c. Of itſelf it makes a gold coloured pigment, as hath been already obſerved; with indigo or other blues, green: it is commonly tempered with yolk of eggs and a little ſaffron, or with fiſh galls. At Rouen it is uſed for ſtaining wood of the colour of box-wood. It is mixed alſo with wax, employed for heightening the colour of gold, for hardening lead in order to the making of ſhot, and for colouring glaſs.

ORRERY, a curious machine, or movement, for repreſenting the motions and appearances of the heavenly bodies. See plate xxxix. *fig.* 1.

The orrery, or planetarium, is fixed in a frame of ebony, contained by twelve vertical planes, on which are repreſented the twelve ſigns of the zodiac. The upper ſurface is flat, of poliſhed braſs, on whoſe outward circumference are ſcrewed in twelve braſs pillars, which ſupport a large flat ſilvered ring marked 12, repreſenting the ecliptic, with ſeveral circles drawn upon it. The three inner-moſt are divided into twelve parts for the ſigns of the zodiac, each of which is divided into thirty degrees, and among theſe degrees are graved in their proper places, the nodes, aphelia, and greateſt north and ſouth latitudes of the planets. Between the next two circles are the cardinal points. The next three circles have the months and the days of the month, according to the new ſtile. Upon the braſs-ſurface of the machine are graduated ſilver-circles, which carry the planets, repreſented by ſilver-balls, upon arbors or ſtems, that raiſe them up to the height of the plane of the ecliptic; and turning about the handle or winch of the orrery, all the planets move at their proportional diſtances from a little gilt ball in the middle, which repreſents the ſun; and perform their revolutions according to their periodical times. There are fixed indices of blued ſteel, which ſhew the longitudes of the planets, by pointing to the diviſions of the ſilvered rings or circles, as they move round. But as theſe circles, being concentric, give only the mean diſtances, the true orbits, according to their excentricities, are graved on the outſide of each circle, with the periodical times taken from the tables, to ſhew what the revolutions are, nearer than can be performed by any machine. The nodes and aphelia, with the places of greateſt north and ſouth latitudes, are alſo marked on thoſe orbits. In the middle of this large circle, deſigned to repreſent the ecliptic, is fixed a globe, 1, to repreſent the ſun. Next the ſun is a ſmall ball, 2, to repreſent Mercury. Next to this is Venus, 3, repreſented by a larger ball. And, at a greater diſtance from the ſun, you ſee the earth, 4, repreſented by an ivory-ball, ſurrounded at ſome diſtance by a ring, which expreſſes the orbit of the moon, making an angle with the circle that repreſents the ecliptic, and thereby ſhewing the inclination they have to each other in the heavens, and alſo the line of the nodes. Within the ſame ring is another ivory-ball, 5, with a black cape or caſe, to repreſent the moon; the cap is contrived always to cover that hemiſphere which is turned from the ſun, and thereby diſtinguiſheth the enlightened part from the dark ſide, and, conſequently, her age. 6 repreſents Mars. 7 is Jupiter attended with his ſatellites or four moons. And 8, the outmoſt of all the planets, is Saturn with his ring or belt, and five ſatellites, or moons. All theſe are fixed upon ſmall ſtems, which ſeverally repreſent their axes, each of which hath its peculiar and proper inclination to the plane of that circle which repreſents the ecliptic. 9 is a dial-plate; 10, 10, 10, meridians; 11, the equator; 12, the ecliptic with its circles, already deſcribed; 13, 13, two keys for locking and unlocking the diurnal and annual motions; and as to the arctic circle, tropic of Cancer, and moveable horizon, they are named in the figure.

By means of the orrery, a great many perſons, who have not time to apply themſelves to the ſtudy of aſtronomy, and yet are deſirous to be acquainted with the celeſtial appearances, in a few days may get a competent knowledge of ſeveral phænomena; and eſpecially, be cured of the common prejudices againſt the motion of the earth, and the Copernican ſyſtem. See *Copernican*.

But the principal uſe of the orrery is to render the theory of the earth and the moon eaſy and intelligible; and to evidence to our ſenſes how all thoſe appearances happen, which depend on the annual or diurnal rotation of the earth, and the monthly revolutions of the moon: as the variety of ſeaſons, the viciſſitudes and various lengths of days and nights, the manner of ſolar and lunar eclipſes, the various phaſes of the moon, &c. There have been various forms invented for this noble inſtrument, two of which have principally obtained, viz. the hemiſpherical orrery, and the whole ſphere: though the orrery at firſt was made without any ſphere, with only the ſun, the earth and moon revolving about it; but as this was too imperfect a ſtate, they ſoon began to inveſt it, ſome with half a ſphere, and others with a whole ſphere, to be an adequate repreſentation of the ſolar ſyſtem.

If we now ſuppoſe a ſpindle or arbor, with ſix wheels fixed upon it in an horizontal poſition, having the number of teeth in each correſponding to the numbers in the third column, viz. the wheel A M (*fig.* 2.) of 83 teeth, B L of 52, C K of 50, for the earth, D I of 40, E H of 7, and F G of 5; and another ſet of wheels moving freely about an arbor, having the number of teeth in the fourth column, viz. A N of 20, B O of 32, C P of 50, for the earth, D Q of 75, E R of 83, and F S of 148; then, if thoſe two arbors of fixed and moveable wheels are made of the ſize, and fixed at the diſtance from each other, as here repreſented in the ſcheme, the teeth of the former will take thoſe of the latter, and turn them very freely, when the machine is in motion.

Theſe arbors, with their wheels, are to be placed in a box, of an adequate ſize, in a perpendicular poſition: the arbor of fixed wheels to move in pivots at the top and bottom of the box; and the arbor of moveable wheels to go through the top of the box, to a proper height, on the top of which is to be placed a round ball, gilt with gold, to repreſent the ſun. On each of the moveable wheels is to be fixed a ſocket, or tube, aſcending above the top of the box, and having on the top a wire fixed, and bent at a proper diſtance into a right angle upwards, bearing on the top a ſmall round ball, repreſenting its proper planets.

If then on the lower part of the arbor of fixed wheels be placed a pinion of ſcrew-teeth, a winch turning a ſpindle with an endleſs ſcrew playing in the teeth of the arbor, will turn it with all its wheels; and theſe wheels will move the others about with their planets, in their proper and reſpective periods of time, very exactly. For while the fixed wheel C K moves its equal C P once round, the wheel A M will move A N a little more than four times round, and ſo will nicely exhibit the motion of Mercury; and the wheel F G will turn the wheel F S about $\frac{1}{295}$ round, and ſo will truly repreſent the motion of Saturn: and the ſame is to be obſerved of all the reſt.

ORRICE, the common name of the Iris-root. See the article *Iris*.

ORTHODOX, in church-hiſtory, an appel-

Fig. 1. Oscillation.

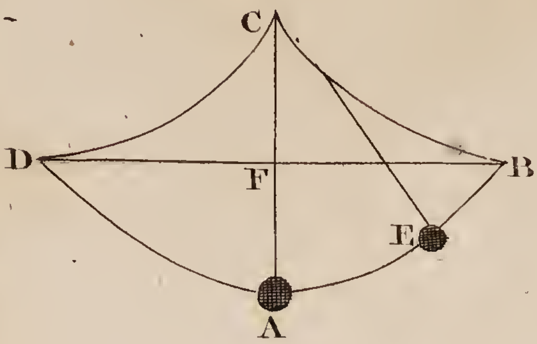


Fig. 2. Oscillation.

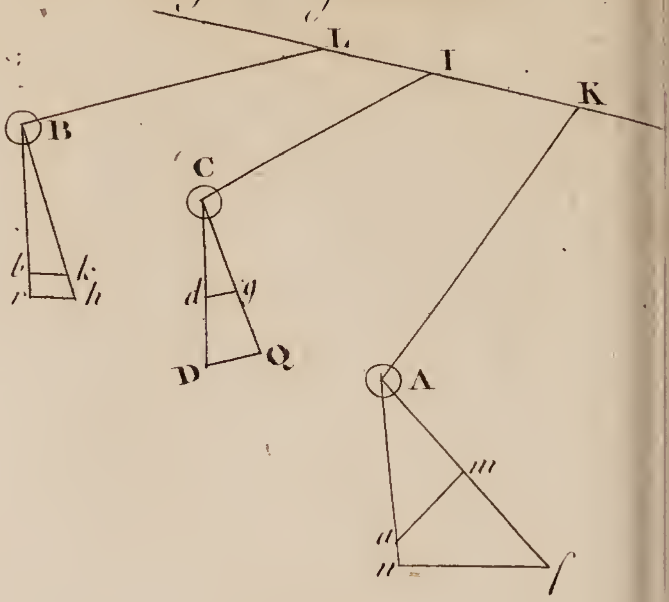


Fig. 3.

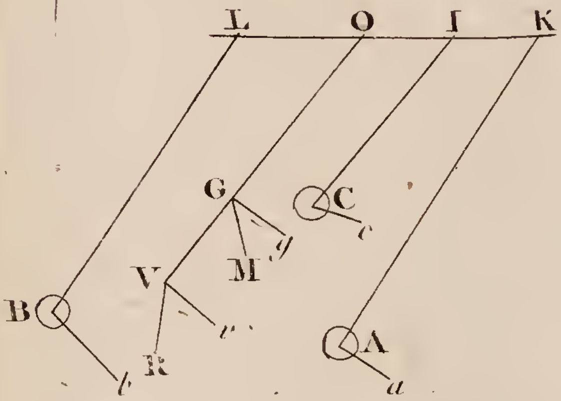


Fig. 4.

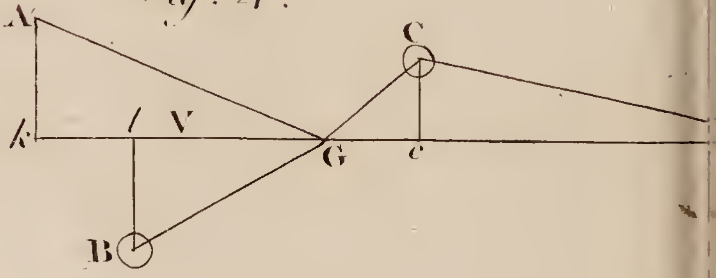
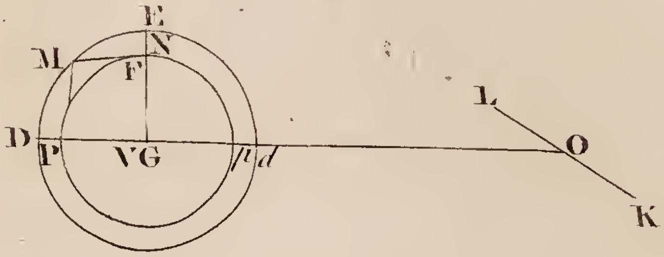


Fig. 5.



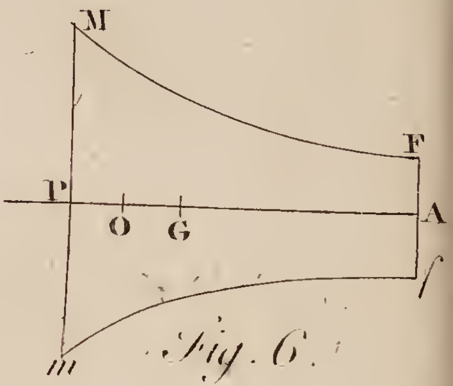


Fig. 6.

Fig. 7. Parabola.

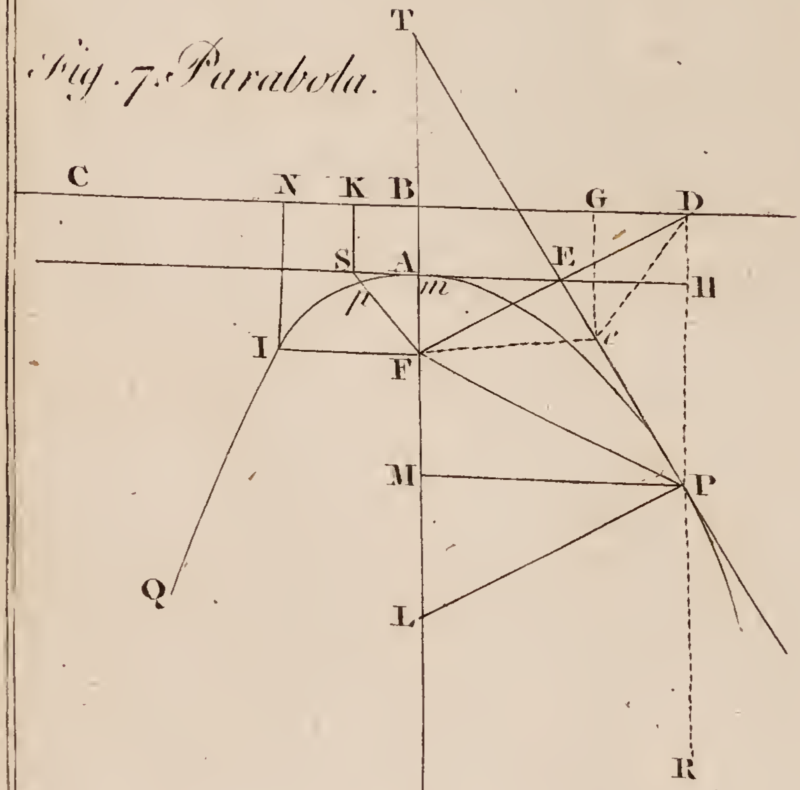
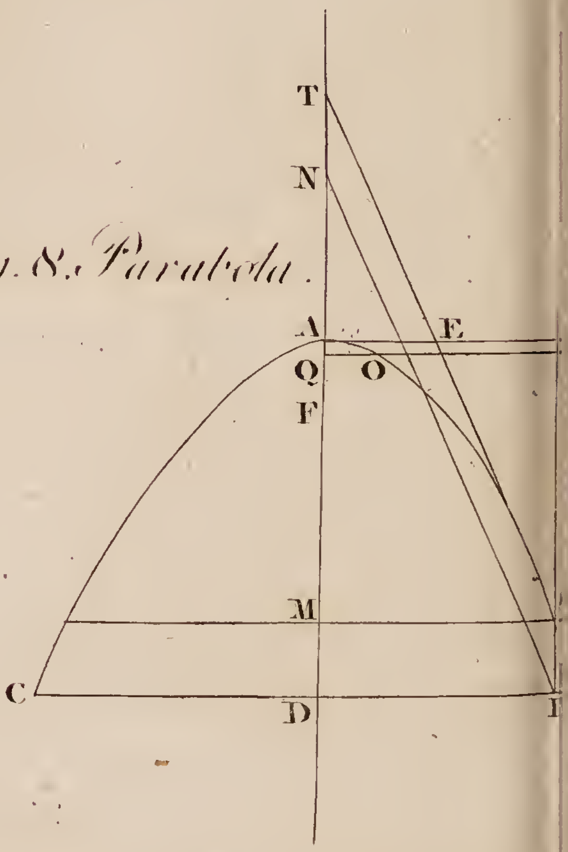


Fig. 8. Parabola.



appellation given to thoſe who are ſound in all the articles of Chriſtian faith.

ORTHOGRAPHIC *Projection of the Sphere*, that wherein the eye is ſuppoſed at an infinite diſtance; ſo called, becauſe the perpendiculars from any point of the ſphere will all fall in the common interſection of the ſphere with the plane of the projection. See *Projection*.

ORTHOGRAPHY, that part of grammar which teaches the nature and affections of letters, and the method of ſpelling or writing words with all the proper and neceſſary letters, making one of the four greateſt diviſions or branches of grammar.

ORTHOGRAPHY, in geometry, the art of drawing or delineating the front plan of any object, and of expreſſing the heights or elevations of each part. It is called orthography, from its determining things by perpendicular lines falling on the geometrical plane.

ORTHOGRAPHY, in architecture, the elevation of a building. This orthography is either external or internal. The external orthography is taken for the delineation of an external face or front of a building; or, as it is by others defined, the model, platform, and delineation of the front of a houſe, that is contrived, and to be built, by the rules of geometry, according to which pattern the whole fabric is erected and finiſhed. This delineation or platform exhibits the principal wall, with its apertures, roof, ornaments, and every thing viſible to an eye placed before the building.

Internal orthography, which is alſo called a ſection, is a delineation, or draught of a building, ſuch as it would appear, were the external wall removed.

ORTHOGRAPHY, in perſpective, the front or fore view of any plane; that is, the ſide or plane that lies parallel to a ſtraight line, which may be imagined to paſs through the outward convex point of the eye, continued to a convenient length.

ORTHOGRAPHY, in fortification, the profile or repreſentation of a work; or a draught ſo conducted, as that the length, breadth, height, and thickneſs of the ſeveral parts are expreſſed, ſuch as they would appear if perpendicularly cut from top to bottom.

ORYZA, rice, in botany. This plant is cultivated in vaſt abundance in the Eaſt, as alſo in Carolina, for food. It is ſaid to be good in dyſenteries, diarrhœas, &c.

OSCHEOCELE, in ſurgery, a hernia of the ſcrotum. Of this rupture, ſometimes called hernia ſcrotalis, there are two kinds; a true one, proceeding from a prolapſion of the inteſtine, or omentum; and a ſpurious one, or only apparent, ariſing from a tumour of the teſticles, or ſpermatic veſſels, or a diſtenſion with air, water, or ſome offending humour: the oſcheocele is therefore diſtinguiſhed into various kinds, according to the different ſubſtances with which the ſcrotum is diſtended, by which it is alſo differently denominated: when the inteſtine is prolapſed through the proceſs of the peritonæum into the ſcrotum, the tumour is then called enterocele; if from the omentum, epiplocele; if from a diſtenſion with water, hydrocele; if from wind or flatus, pneumatocele; when from blood, hæmatocele; if the teſticle is enlarged beyond its proper dimenſions, it is termed ſarcocele; and when the ſpermatic veins are too much diſtended, it is termed varicocele, cirſocele, or hernia varicoſa; and when an abſceſs is formed in the ſcrotum, it is by ſome termed hernia humoralis: ſometimes two or more of theſe ſubſtances concur together to form the tumour, which is then named conjunctly from them entero-epiplocele, hydro enterocele, &c. Each of theſe may be ſeen ſeparately treated of, under their ſeveral heads.

OSCILLATION, in mechanics, vibration, or the reciprocal aſcent or deſcent of a pendulum.

1. If a ſingle pendulum be ſuſpended between two ſemi-cycloids BC, CD plate XL. fig. 1.) that have the diameter CF of the generating circle equal to half the length of the ſtring, which, as it oſcillates, folds about them; all the oſcillations, however unequal, will be iſochronal in a non reſiſting medium.

2. The time of a whole oſcillation through any arch of a cycloid, is to the time of the perpendicular deſcent through the diameter of the generating circle, as the periphery of the circle to the diameter.

3. If two pendulums deſcribe ſimilar arches of circles, the times of the oſcillations are in the ſubduplicate ratio of their lengths.

4. The number of iſochronal oſcillations, made in the ſame time by two pendulums, are reciprocally as the times wherein each of the oſcillations are made. The times of the oſcillations, in different cycloids, are in the ſubduplicate ratio of the length of the pendulums.

5. The length of a pendulum that will perform its oſcillations in a ſecond, is 3 125 inches, or three feet 3.125.

6. The ſhorter the oſcillations in the arch of a circle are, the truer will the pendulum meaſure time, or the more iſochronal will the oſcillations be. See the article *Pendulum.*

Center of OSCILLATION, in a ſuſpended body, is a certain point therein, each vibration whereof is performed in the ſame manner, as if that point or part alone were ſuſpended at that diſtance from the point of ſuſpenſion. Or it is a point, wherein, if the whole length of a compound pendulum be collected, the ſeveral oſcillations will be performed in the ſame time as before. Its diſtance, therefore, from the point of ſuſpenſion, is equal to the length of a ſingle pendulum whoſe oſcillations are iſochronal with thoſe of the compound one.

In order to determine the place of the center of oſcillation in a compound pendulum, let the bodies C, A, and B, be ſuppoſed fixed to the axis at their reſpective diſtances CI, AK, and BL (plate xl. *fig.* 2.) and to gravitate in parallel lines CD, A *a*, and B *b*; let theſe lines be equal to each other, and repreſent the accelerating force of gravity; let C *g*, A *f*, and B *b*, repreſent the forces by which their motions are actually accelerated with their reſpective directions perpendicular to IC, KA, and LB, while the figure moves upon its axis KL. Let D Q . *am*, and *b k*, be perpendicular to thoſe directions in Q, *m*, and *k*, and *g d*, *f n*, *b r*, be perpendicular to C D, A *a*, and B *b*, in *d*, *n*, and *r*. If C Q be greater than C *g*, but A *a* leſs than A *n*, and B *b* leſs than B *r*, then the body C loſes by its action on the lever I C a force $C \times gQ$, and thereby the bodies A and B acquire the forces $A \times mf$ and $B \times kb$ reſpectively. Hence regard being had to the lengths of the ſeveral levers C I, K A, and B L, according to the known principles of mechanics, $C \times gQ \times IC$ will be equal to $A \times mf \times KA + B \times kb \times LB$, or (becauſe the velocities C *g*, A *f*, and B *b*, are as the diſtances from the axis I C, A K, and B L) $C \times Cg \times gQ = A \times Af \times mf + B \times Bb \times kb$, that is $C \times CQ \times Cg - C \times \overline{Cg}^2 = A \times \overline{Af}^2 - A \times Af \times Am + B \times \overline{Bb}^2 - B \times Bb \times Bk$. But $CQ \times Cg$ is equal to $CD \times Cd$, $Af \times Am$ to $Aa \times An$, and $Bb \times Bk$ to $Bb \times Br$. Therefore $C \times \overline{Cg}^2 + A \times \overline{Af}^2 + B \times \overline{Bk}^2$ is equal to $C \times CD \times Cd + A \times CD \times An + B \times CD \times Br$; from which it follows, that when all the bodies deſcend while the axis moves, the ſum of the products of the bodies multiplied by the ſquares of the reſpective velocities acquired by them at any time, is the ſame as if they had fallen freely along the perpendicular altitudes from which they have deſcended. But if any body as B (for example) had been on the other ſide of the axis K L, ſo as to have aſcended while the common center of gravity of the bodies deſcended, *b k* had been equal to B *k* + B *b*. In this caſe the term $B \times CD \times Br$ muſt be ſubducted in the latter part of the laſt equation; and in general the ſum of the products of the bodies multiplied by the ſquares of the reſpective velocities, is equal to the difference of the ſum of the products of thoſe that deſcend, multiplied by the ſquares of the velocities that would have been acquired by the ſame deſcents if they had fallen freely, and of the ſum of the products of thoſe that aſcend, multiplied by the ſquares of the reſpective velocities that would be acquired by falling freely along the reſpective altitudes to which they have ariſen. In either caſe it follows, that if the bodies be ſuppoſed to aſcend from their reſpective places at any time, and to be retarded by their gravity only, their common center of gravity will always aſcend to the ſame level from which it deſcended.

Suppoſe therefore O V (*fig.* 3.) to be equal to the length of a ſimple pendulum, that in a vacuum performs its vibrations in ſimilar arcs, in the ſame time with the compound pendulum above deſcribed; or let O V be the diſtance of a point in this latter pendulum that moves in it, with the ſame velocity as if O V was a ſimple pendulum ſuſpended at O. Let S repreſent the ſum of the bodies C, A, and B, and O G be the diſtance of their center of gravity from the axis. While the pendulum moves, let the points C, B, A, G, and V, deſcend to *c*, *b*, *a*, *g*, and *v*, reſpectively; let G M be the perpendicular deſcent of the center of gravity, and V R the perpendicular deſcent of the point V; then becauſe the velocities of the points C, B, A, G, and V, are as their diſtances from the axis of oſcillation, and the velocity acquired at *v* is ſuch as would cauſe a body to aſcend from R to V (by the ſuppoſition) and the altitudes to which bodies would aſcend by the velocities acquired at *c*, *b*, *a*, and *v*.

v, are in the duplicate ratio of theſe velocities, it follows that C, B, and A, would aſcend by their reſpective velocities, at thoſe points to the altitudes $VR \times \frac{IC^2}{OV^2}$, $VR \times \frac{LB^2}{OV}$, and $VR \times \frac{KA^2}{OV^2}$. And ſince their common center of gravity would aſcend to the ſame altitude from which it deſcended, as has been ſhewn above, it follows that $C \times VR \times \frac{IC^2}{OV^2} + B \times VR \times \frac{LB}{OV^2} + A \times VR \times \frac{KA^2}{OV^2}$ is equal to $S \times GM$. But the arcs deſcribed by G and V being ſimilar, GM is to VR as OG to OV; conſequently $S \times OG \times OV$ is equal to $C \times IC^2 + R \times LB^2 + A \times AK^2$; and OV is found by multiplying each body by the ſquare of its diſtance from the axis of oſcillation, and dividing the ſum of the products by $S \times OG$, which is the product of the ſum of the bodies multiplied by the diſtance of their common center of gravity from the ſame axis. The ſame demonſtration being applicable to any number of bodies, we may conclude, that when any body moves about a given axis, the diſtance of its center of oſcillation from this axis (or the length of a ſimple pendulum that vibrates in a void in the ſame time with the body in ſimilar arks) is found by computing the fluent when each particle or element of the body is ſuppoſed to be multiplied by the ſquare of its diſtance from the axis, and dividing this fluent by the product of the body multiplied by the diſtance of its center of gravity from the ſame axis.

If the points C, A, and B, (fig. 4.) be in one plane that is perpendicular to the axis of oſcillation in O, let C *c*, B *l*, and A *k* be perpendicular to O G in *i*, *l*, and *k*; then OC^2 being equal to $OG^2 + CG^2 - 2OGi$. OB^2 to $OG^2 + BG^2 + 2OGl$, and OA^2 to $OG^2 + 2AG^2 + 2OGk$ (Elm. 12. and 13.2) the point *i* being betwixt O and G, and the points *l* and *k* on the other ſide of G; and $C \times iG$, being equal to $B \times lG + A \times kG$, it follows, that the ſum of the products of the bodies multiplied by the ſquares of their diſtances from O, or $S \times OG \times OV$, is equal to $S \times OG^2 + C \times CG^2 + B \times BG^2 + A \times AG^2$; conſequently $S \times OG + GV$ is equal to the ſum of the products, when each body is multiplied by the ſquare of its diſtance from the center of gravity; and GV, the diſtance of the center of oſcillation from the center of gravity, is found by dividing this ſum by $S \times OG$; whence the computation of the diſtance of the center of oſcillation from the axis in ſolids is in ſome caſes abridged.

To give an example, let D E *d* (fig. 5.) be the ſection of a ſphere through its center G by a plane perpendicular to the axis of oſcillation, D *d* the diameter of this circle perpendicular to the axis, G E the radius perpendicular to D *d*, and P F *p* any concentric circle; let M P, an ordinate perpendicular to D *d* at P, meet D E *d* in M, M N be perpendicular to G E in N, and the ratio of *n* to 1 expreſs that of the circumference of a circle to its radius. Let a cylindric ſurface be imagined to ſtand on the circumference P F *p* perpendicular to the plane D E *d*, and terminated by the ſurface of the ſphere, and its altitude being 2 P M, it may be expreſſed by $2n \times GP \times GN$, which being multiplied by the ſquare of G P (which is the diſtance of the particles in each ſection of this ſurface perpendicular to the axis of oſcillation from the center of gravity of the ſection), and the product $2n \times GN \times GP^3$, being multiplied by the fluxion of G P, or (becauſe GP^2 is equal to $GD^2 - GN^2$, and the fluxion of G P is to the fluxion of G N, as GN to GP) the product of $2n \times GN^2$, and $GE^2 - GN^2$, being multiplied by the fluxion of PM, and the fluent found will give $2n \times GN^3$ into $\frac{1}{3} GE^2 - \frac{1}{5} GN^2$. But this fluent becomes equal to four-fifteenths $\times n \times GE^5$, when P has deſcribed the whole radius DG, and GN becomes equal to G E; and this being divided by $\frac{2}{3} n \times GE^3 \times OG$ (which expreſſes the ſolid content of the ſphere multiplied by OG) gives GV the diſtance of the center of oſcillation from the center of gravity in the ſphere equal to $\frac{2}{5} \times \frac{GE^2}{OG}$ or two fifths of a third proportional to O G and G E.

The general method of determining the center of oſcillation in any plane figure, as F *f m* M, (fig. 6.) is thus. Let G be the center of gravity, and O the center of oſcillation of the propoſed figure when it revolves about the axis F *f*, O G A perpendicular to F *f* in A, and to M *m* in P, $AP = x$, $Mm = y$, $GA = z$, $OA = u$; then $z = \frac{\text{Flu. } yx\dot{x}}{\text{Flu. } yx}$ and $u = \frac{\text{Flu. } yx^2\dot{x}}{\text{Flu. } yx\dot{x}}$. Suppoſe $\frac{1}{2} y = x^m$;

then $z = \frac{\text{Flu.}\ x^{m+1}\dot{x}}{\text{Flu.}\ x^{m}\,x} = \frac{m+1}{m+2} \times x$, or G A : P A : : $m+1 : m+2$; and $u = \frac{\text{Flu.}\ x^{m+2}\dot{x}}{\text{Flu.}\ x^{m+1}\,x} = \frac{m+2}{m+3} \times x$, or O A : P A : : $m+2 : m+3$.

The center of oſcillation of a ſphere was juſt now determined from the fluent of $2ny^2\dot{y} \times \overline{aa-yy}$ (ſuppoſing in the laſt fig. but one) the radius GE$=a$, GN$=$PM$=y$, OG$=z$, and n to 1, as the circumference of the circle to its radius) which is $2ny^3 \overline{\times \frac{aa}{3} - \frac{yy}{5}}$; and this fluent becomes equal to $\frac{4na^5}{15}$, when PM$=$GE, or $y=a$, which being divided by $\frac{2n}{3} \times a^3 \times z$ (the ſolid content of the ſphere multiplied by the diſtance of its center of gravity from the axis of oſcillation) gives $\frac{2}{3} \times \frac{aa}{z} = u$. The center of percuſſion is in a right line perpendicular to A O at the point O.

* OSIRIS, in pagan worſhip, the ſon of Jupiter and Niobe, reigned over the Argivi; but afterwards reſigning his kingdom to his brother Ægialeus, travelled into Egypt, of which he made himſelf maſter. He afterwards married Io, or Iſis, eſtabliſhed good laws among the Egyptians, and introduced the moſt uſeful arts, after which he was killed, and cut into pieces by his enemies, when both he and Iſis were honoured as deities.

* OSNABRUG, biſhoprick of, one of the ſtates of the circle of Weſtphalia, governed alternately by a popiſh and a proteſtant biſhop. It is bounded on the north by Lower Munſter, on the ſouth by Upper Munſter, on the weſt by part of the country of Lingen, and on the eaſt by the principality of Minden. When they chuſe a catholic biſhop, it is done entirely by the catholics; but the proteſtant biſhop muſt always be elected by the houſe of Brunſwick Lunenburg. However, the inſpection and adminiſtration of eccleſiaſtical affairs, with reſpect to the Roman catholics, belongs to the elector of Cologn, as metropolitan, while the proteſtant biſhop governs in civil affairs. The chapter is compoſed of 25 canons. His majeſty's ſecond ſon is the preſent biſhop of Oſnabrug. It is 40 miles in length, and 12 in breadth, and is divided into ſeven bailiwicks. This country abounds in cattle, and has a vaſt number of hogs. The only remarkable places, beſides Oſnabrug, are Iburg and Bellheim.

OSSICLE, *Oſſiculum*, a little bone, a diminutive of bone; in which ſenſe it is frequently uſed by anatomiſts.

Botaniſts alſo uſe oſſiculum for the ſtone of a plum.

OSSIFICATION, the formation of bones, but more particularly the converſion of parts naturally ſoft, to the hardneſs and conſiſtence of bones.

* OSTEND, a ſea port town of the Auſtrian Netherlands. Though ſmall, it is clean and neat, conſiſting of a large ſquare market place, from whence run 8 handſome ſtreets. The town is ſeated in a moraſs, almoſt ſurrounded by wide trenches, filled with ſea-water, and is the beſt harbour in Flanders next to that of Sluys. In 1601 it was beſieged by the Spaniards, but they could not take it till 1604. In this ſiege there periſhed by ſword and ſickneſs 50,000 men on the ſide of the States-General, and near 80,000 on the ſide of the Spaniards. The Dutch had always a free communication with the town by ſea, on which account the ſiege laſted ſo long. The French took poſſeſſion of it on the death of Charles II. king of Spain; it was retaken by the confederates in 1706. The French became maſters of it in 1745, after the battle of Fontenoy, and it was reſtored to the houſe of Auſtria by the treaty of Aix-la-Chapelle. It is ſeated on the ſea, 10 miles W. of Bruges, 22 N. E. of Dunkirk. Long. 2. 59. E. Lat. 51. 14. N.

OSTEOCOLLA, in natural hiſtory, though ſuppoſed by many to be an earth, is truly a cruſted kind of ſpar, debaſed by earth, and therefore not tranſparent.

Oſteocolla is frequent in Germany, where it is found buried near the ſurface of the earth, ſometimes in ſtrata of ſand, but more frequently among marls: it ſhould be choſen for uſe, the pureſt that can be had, of a pale brown colour, and of a tolerably cloſe and firm texture.

It has long been famous for bringing on a callus in fractured bones: its name oſteocolla ſignifying the bone-glue, or bone-binder. It is alſo recommended as a diuretic, and as good in the flour albus; but, at preſent, little regard is paid to it; ſince, if it has any virtues, they muſt be wholly owing to ſpar, which may be given to greater advantage in a purer form.

OSTEOLOGY, that branch of anatomy which treats of the bones. The objects of oſteology are the bones, whether they be recent or dried, whether they have belonged to an infant or an adult; and with the bones are to be conſidered their perioſteum, medulla or marrow, the ligaments, and the cartilages.

The ſtudy of the bones is to be conſidered in two lights, as theoretical, or as practicable. In the firſt ſenſe, oſteology only extends to the external conformation and uſe of the bones; whereas, in the latter or practical ſenſe, it comprehends the more intimate knowledge of their interior ſtructure and connections. 1. If their internal parts are the ſubjects of enquiry, they are to be cut or broken 2. If the articulations are to be examined, the ligaments and cartilages, as well at the articulations themſelves, muſt be diſſected and carefully obſerved. 3. If the making a ſkeleton be the intent, then their preparation and preſervation come into this branch. See *Bone*, *Articulation*, *Ligament*, *Skeleton*, &c.

OSTRACITES, in natural hiſtory, the name by which authors call the foſſile oyſter-ſhells.

Oſtracites has the ſame medicinal virtues with the belemnites, and lapis-judaicus, only in a higher degree; being accounted, by Dr. Liſter, one of the greateſt known medicines in nephritic caſes: the doſe, in powder, is from half a dram to a dram, in white wine; and to prevent a ſickneſs at the ſtomach, that ſometimes attends the taking it, one third part of the quantity of powdered camomile flowers may be mixed with it.

OSTRICH, *Struthio*, in ornithology, a diſtinct genus of birds, having two toes to each foot, and theſe are both placed forward; and its head is ſimple, or not ornamented with the appendages which are common to moſt birds of this order. The oſtrich is the talleſt of all the bird kind, meaſuring ſeven or eight feet when it ſtands erect: its legs are very long and naked; and the ſtructure of the foot, having only two toes, is particular.

* OSWEGO, ſiege of. The attack of this place was reſolved on early in the ſpring of 1756, by the marquis de Vaudreuil, governor of Canada; and with this view he firſt made himſelf maſter of the adjacent country; which, it is true, was not very prudent, as it ought to have given us the alarm; but ſuch a contemptible opinion had the French then conceived of our conduct, that they deſpiſed any thing we ſhould do for the defence of Oſwego, or for the attack of Crown-Point, which had been reſolved upon by the Engliſh officers; therefore inſtead of ſending a reinforcement to Crown-Point, they ſent all the troops they raiſed at Quebec and Montreal, amounting to 1300 regulars, and 1700 militia, beſides Indians, up the river St. Lawrence, to Fort Frontignac, where they rendezvouſed in July, and on the 29th of that month, the marquis de Montcalm, who was to have the command of this expedition, arrived there. His firſt care was to ſend out two armed veſſels, one of ſixteen and the other of twelve guns, to cruiſe off Oſwego, in order to prevent the garriſon's receiving any intelligence by water; and at the ſame time he ſent a ſtrong party of Canadians and Indians by land, with orders to poſt themſelves on the road between Oſwego and Albany, ſo as to intercept every courier that might attempt to paſs from either of thoſe places to the other. All the forces, and the veſſels with the artillery and ſtores, being arrived in the bay of Nixoure, the place of general rendezvous, Montcalm ordered his advanced guard to proceed to a creek, called Anſe aux Cabannes, three leagues from Oſwego. The firſt diviſion having arrived at that creek on the 10th of Auguſt, in the morning, the van-guard proceeded at four in the afternoon, by land, acroſs woods, to another creek, within half a league of Oſwego, in order to favour the debarkation; and at midnight the firſt diviſion arrived at this creek, where they erected a battery, pointing to the lake Ontario, for the protection of their ſhips and veſſels. The 11th and 12th were employed in making gabions, ſauciſſons, and faſcines, and in cutting a road acroſs the woods, from the place of landing to the place where the trenches were to be opened. The ſecond diviſion arrived on the 12th, in the morning, with the artillery and proviſions, which were immediately landed. This is the account given by the French themſelves of their preparations for this important ſiege; and as we never had any authentic account publiſhed, we muſt go on with giving an account of the ſiege itſelf, which was as follows: Though diſpoſitions were made on the 12th, for opening the trenches at night, it was midnight before

we could begin the trench, which was rather a parallel of about a hundred toiſes in front, and opened at the diſtance of about ninety toiſes from the foſſè of fort Ontario, in ground embarraſſed with trunks of trees, &c. This parallel being finiſhed at five in the morning, the workmen began to erect the batteries The fire of the enemy, which had been very hot from day-break, ceaſed at ſix in the evening, and we perceived that they had evacuated the fort, and retired acroſs the river into Oſwego. Mr. Montcalm immediately took poſſeſſion of Fort Ontario, and ordered the communication of the parallel to be continued to the bank of the river, where, the beginning of the night, we began a grand battery, placed in ſuch a manner, that it could not only batter Fort Oſwego, and the way from thence to Fort George, but alſo the intrenchments of Oſwego. On the 14th a body of Canadians and ſavages croſſed the river, ſome by ſwimming, and others by wading with the water up to their middles, in order to inveſt and attack the fort on the ſide of the woods. This bold action, by which the communication between the two forts was cut off, the celerity with which the works were carried on, in ground that the enemy thought impracticable, and the fire of a battery of nine guns, forced the enemy to hang out a white flag. By virtue of the capitulation, the garriſon ſurrendered priſoners of war, and we immediately took poſſeſſion of Oſwego and Fort St. George, which we entirely deſtroyed, agreeably to our orders, after removing the artillery, warlike ſtores, and proviſions. There were at Oſwego ſeven armed ſhips, viz. one of eighteen guns, one of fourteen, one of ten, one of eight, and three others mounted with ſwivels, beſides two hundred batteaux of different ſizes, the officers and crews of all which were included in the capitulation. The enemy had 152 men killed and wounded; colonel Mercer, the commander, was of the number of the former. On our ſide we had only one engineer, one Canadian, one ſoldier, and one gunner killed, and twenty ſlightly wounded. We made 1600 priſoners, including eighty officers; theſe were Shirley's and Pepperel's regiments, and a part of Schuyler's regiment of militia. We found in the forts 121 pieces of artillery, fifty-five of which were cannon of different bores, and fourteen mortars, with a great quantity of ammunition and proviſion. We wiſh we could with any public authority ſay, that this account of our loſs at Oſwego was as falſe and extravagant as the French accounts of their military exploits uſually are; but if we judge from what they ſay of the number of priſoners, we muſt conclude that the French of Canada have not yet got the rodomontading humour of their countrymen in Europe; for in November a French frigate, called the Renommèe, arrived at Plymouth from Quebec, with 384 officers and ſoldiers of the garriſon of Oſwego on board, to be exchanged for French priſoners here, beſides what had been exchanged or redeemed in America, where, it ſeems, we had neither money nor priſoners to give in exchange for the whole number; and beſide ſome that were ſent priſoners to France, and not exchanged till the year following. But though no account of this affair was publiſhed here by authority, we ſhall add ſome things from an account of this ſiege, given by an officer who was one of thoſe made priſoners at this place. This gentleman tells us, that the enemy had employed in this ſiege 1500 regulars, 3000 Canadians and Indians, and 1000 battoe-men, thirty-eight pieces of cannon, and ſeveral mortars. That our people were, on the 13th, obliged to deſert Fort Ontario, becauſe its works were not cannon-proof; but that they fired away all their ſhells and ammunition, and ſpiked up their cannon, before they left it. That the fort they retired to was ſo much expoſed, that the enemy could, from Fort Ontario, ſee the buckles of their ſhoes, colonel Mercer, their governor, having been killed the very next day in the morning, by a cannon-ſhot, as he was directing the replacing of two of their cannon that had been diſmounted; and that by theſe means they found themſelves, the 14th, under the hard neceſſity to accept of the following capitulation. Art. I. The garriſon ſhall ſurrender priſoners of war, and ſhall be conducted from hence to Montreal, where they ſhall be treated with humanity, and every one agreeable to their reſpective ranks, and according to the cuſtom of war. II. Officers, ſoldiers, and individuals ſhall have their baggage and cloaths, and they ſhall be allowed to carry them with them. III. They ſhall remain priſoners of war until they are exchanged. To theſe articles the gentleman adds as follows: We imagined ourſelves ſecure as to our perſons and baggage, but, to our great ſurprize, we were ſoon convinced to the contrary. No ſooner had we delivered up our arms, than both officers and ſoldiers were ordered to the parade; there we ſtood to be inſulted by the enemy Indians, who, not ſatisfied with taking away our baggage, murdered ſeveral of our ſoldiers as they ſtood on the parade, and ſcalped all our ſick in the hoſpital; they cut lieutenant de la Court to pieces, as he lay in his tent, after having his wound dreſſed, though delivered into the care of a French officer; and many of us narrowly eſcaped to the other ſide of the water with our lives, and even there we expected to be all maſſacred, as the Indians made ſeveral efforts to get into the fort to ſcalp us. A number of colonel Schuyler's regiment, about twenty or twenty-two, were delivered up to the Indians, by the marquis de Montcalm's orders, in lieu, as he ſaid, of the ſame number of Indians we had killed; though it was expreſſed in the capitulation, that both officers and ſoldiers ſhould be ſecured from any inſults. Colonel Schuyler demanded them at Quebec, but never received any ſatisfaction; and in all probability it was too late, as the Indians, doubtleſs, gratified their inſatiable revenge on ſeveral of them, to atone for the blood of their brethren. The marquis acted cunningly in not ſuffering any of his Britiſh majeſty's ſoldiers to be given up, as he well knew it would not be put up with: ſo the lot fell on the poor Provincials. Thus the French keep treaties, and articles of capitulation. The officers of the three regiments were next day put on board twenty batteaux for Montreal; and Auguſt the 19th, about five in the morning, we arrived at Montreal, where we ſaw the ſhore lined with a great number of Indians. Lieutenant-colonel Littlehales, being commanding officer, ſtept firſt on ſhore, and was immediately ſeized by a number of theſe ſavages, who buffeted him, knocked him down, and would have killed him, but were prevented by ſome regulars, ſent down by the governor's orders to guard us up. We were drove about, and uſed extremely ill, till we got into the place; the Indians, like ſo many hell-hounds, were, as they ſaid, eager for revenge; but in a little time we were ſent under a guard to different quarters in the town, and in a day or two came aboard, and were never uſed ill after by the Indians. It is a cuſtom among them to buffet priſoners on their arrival, and our Mohawks uſe their priſoners in the ſame manner. Thus we have given the beſt account we could collect of our loſs of Oſwega. And from this account can we ſuppoſe that any military ſkill was employed in erecting what we called the forts there? Can we ſuppoſe that any common ſenſe directed us to poſt ſuch a number of men, and to lay up ſuch magazines of proviſions and military ſtores, at ſuch an untenable place, where the enemy could ſo eaſily come with a ſuperior force, and provided with artillery, and every thing neceſſary for a ſiege, and where our garriſon, after being inveſted, could expect no relief? From ſuch a conduct could we expect ſucceſs in any of our warlike operations?

OSYRIS, poets roſemary, in botany. This whole ſhrub is aſtringent, and conſequently good in fluxes.

Oſyris is alſo a name ſometimes uſed for the linaria, or toad-flax.

OTHONNA, baſtard jacobæa, in botany, a genus of plants.

OTIS, the buſtard, in ornithology, makes a diſtinct genus of birds, the characters of which are theſe: there are three toes on each foot, all turned forwards; and the head is naked, or has no comb. The buſtard has been confounded with the turkey: it is about the ſize of the common peacock, and runs at a great rate, being frequently taken with greyhounds in a fair courſe, in the manner of hunting the hare: its fleſh is well taſted.

OTTER, *Lutra*, in zoology, a genus of quadrupeds, the characters of which are theſe: the fore-teeth in the upper jaw are ſtraight, diſtinct, and acute; thoſe of the under jaw are obtuſe, and ſtand cloſe together: the ears are ſituated lower than the eyes, and the feet are furniſhed each with five toes, and are palmated, or formed for ſwimming. Of this genus there are two ſpecies: 1. The common otter, with all the toes of an equal length: this is a very fierce animal, three feet in length, including the tail. 2. The Braſilian otter, with the inner toe ſhorter than the reſt. This is ſomewhat larger than the former ſpecies.

* OTWAY, Thomas, a celebrated tragic poet, was the ſon of Mr. Humphry Otway, rector of Wolbeding in Suſſex, and was born at Trottin in that county, the 3d of March 1651. He was educated at Oxford, when leaving the univerſity without a degree, he retired to London, where he applied himſelf to poetry, and commenced player, in which he did not

much ſucceed. However, the ſprightlineſs of his converſation gained him the favour of Charles Fitz Charles, earl of Plymouth, who procured him a cornet's commiſſion in a new-raiſed regiment ſent into Flanders; but he returned from thence in neceſſitous circumſtances, and applied himſelf again to writing. He was naturally extravagant and profuſe, and could not live one year in a comfortable competence, but was either rioting in luxury, or pining away with want, and expoſed to the inſolence and contempt of the world. He had powerful enemies, at the head of whom was Dryden; and though he had the art of moving the paſſions in a very great degree, he was ſeveral times unſucceſsful in his dramatic pieces. In ſhort, after ſuffering many eclipſes of fortune, and being expoſed to the moſt cruel neceſſities, he died of want in a public houſe on Tower-hill, the 14th of April 1685, in the 33d year of his age. It has been reported, that delicacy having long deterred him from borrowing ſmall ſums, he was at length driven to the moſt grievous neceſſity of venturing out of his lurking place, when, naked and ſhivering, he went into a coffee-houſe on Tower-hill, where ſeeing a gentleman of whom he had ſome knowledge, he begged of him to lend him a ſhilling. The gentleman was ſhocked to ſee the author of Venice preſerved begging bread, and being filled with compaſſion, put a guinea into his hand. Mr. Otway thanked his benefactor, inſtantly retired, and changed the guinea to purchaſe a roll; but as his ſtomach was full of wind by exceſs of faſting, the firſt mouthful choaked him, and inſtantly put a period to his life. He wrote nine dramatic pieces, the moſt admired of which are the Orphan, and Venice preſerved. He alſo wrote ſeveral poems.

OVAL, an oblong curvilinear figure, with two unequal diameters, interſecting each other at right angles in the center; or a figure bounded by a ſingle curve line imperfectly round, its length being greater than its breadth, like an egg; whence its name. The proper oval, or egg-ſhape, is an irregular figure, being narrower at one end than the other; in which it differs from the ellipſis, which is the mathematical oval, and equal in breadth at each end. Theſe two are confounded together by the common people, and even geometricians call the oval a falſe ellipſis.

OVARY, *Ovarium*, in anatomy, that part of a female animal wherein the ova or eggs are formed and lodged.

OVATION, in the Roman antiquity, a leſſer triumph, allowed to commanders for victories won without the effuſion of much blood, or for defeating a mean and inconſiderable enemy. The ſhow generally began at the Albanian mountain, whence the general, with his retinue, made his entry into the city on foot, with many flutes or pipes ſounding in concert as he paſſed along, and wearing a garland of myrtle as a token of peace. The term ovation, according to Servius, is derived from *ovis*, ſheep, becauſe on this occaſion the conqueror ſacrificed a ſheep, as in a triumph he ſacrificed a bull.

OVEN, a kind of domeſtic furnace, uſed for baking bread, pies, tarts, &c. of a circular ſtructure, with a very low roof, well lined, both on the top, bottom, and ſides, with ſtone; it has a ſmall entrance in the front, which is exactly fitted by a kind of door, which being clapped to the mouth of the oven confines the heat, while bread, pies, or puddings, are baking. Over this, paſtry-cooks, &c. have another oven built much in the ſame manner, which is uſed for ſuch things as require a leſs degree of heat. Ovens are heated by burning dry woods, faggots, &c. in them, till all the parts are equally hot.

Aſſaying OVEN, in metallurgy, a particular kind of furnace, uſed by aſſayers in their operations upon metals.

OVER-RULING *an Objection*, in law, the rejecting or ſetting it aſide by the court.

OVERSEERS *of the Poor*, public officers appointed by ſtatute in every pariſh, to provide for the poor therein.

OVERT, the ſame with open: thus an overt-act ſignifies an act which, in law, muſt be clearly proved; and ſuch is to be alledged in every indictment for high treaſon.

* OVID, or PUBLIUS OVIDIUS NASO, a celebrated Latin poet, and one of the fineſt geniuſes of the Auguſtan age, was a Roman knight, born at Sulmo, in the 43d year before the Chriſtian æra. He had from his infancy an extraordinary fondneſs for writing verſes. He ſtudied rhetoric under Aurelius Fuſcus, and for ſome time frequented the bar; but was afterwards diſguſted at that ſtudy, and applied himſelf entirely to poetry. Ovid, after having obtained the eſteem of Auguſtus, incurred his diſpleaſure, and was baniſhed to Tomos, a city

on the Pontus Euxinus, near the mouth of the Danube, when he was fifty years of age. Several writers have ſaid, that he was ſent into baniſhment for being one of the lovers of Julia, the daughter of Auguſtus. Ovid himſelf ſays, that his being ſent into exile was occaſioned by the licentiouſneſs of his verſes, and his having ſeen, by accident, and involuntarily, ſomething that he ought not to have ſeen. He in vain endeavoured to be reſtored to favour. He died in the country of the Getæ, in the year 17, aged 57, after having ſpent ſeven years in baniſhment. His poems, which are ſtill extant, are, 1. His Metamorphoſes. 2. His *Faſti*. 3. *De Triſtibus*. 4. *De Ponto*. 5. *Epiſtolæ*. 6. *De Arte Amandi*. There are diſcoverable in Ovid's poems great wit, and an eaſy, ſoft, natural, and luxuriant ſtyle. He is a perfect maſter of the paſſions, but he is ſometimes too negligent and profuſe, and almoſt always too licentious. He particularly excelled in elegies.

OVIPAROUS, a term applied to ſuch animals as bring forth their young *ab ovo*, from eggs; as birds, inſects, &c. The oviparous kind ſtand in oppoſition to thoſe which bring forth their young alive, called vivaparous animals, as man, quadrupeds, &c. Oviparous animals may be ſaid to be ſuch as conceive eggs which they afterwards bring forth, and from which, by the incubation of the parent, or ſome other principle of warmth and fermentation, at length ariſe animals; which, after they have ſpent the moiſture or humour they have been ſurrounded withal, and are grown to a ſufficient bulk, firmneſs, and ſtrength, break their ſhell and come forth. The oviparous kind, beſides birds, include divers other ſpecies of terreſtrial animals.

OUNCE, *Uncia*, a ſmall weight, the ſixteenth part of a pound avoirdupois, and the twelfth part of a pound troy: the ounce avoirdupois is divided into eight drams, and the ounce troy into twenty penny-weights.

OUNCE, *Lynx*, in zoology.

OVOLO, or OVUM, in architecture, a round moulding, whoſe profile or ſweep, in the Ionic and Compoſite capitals, is uſually a quadrant of a circle; whence it is alſo commonly called the quarter round. It was uſually enriched with ſculpture by the ancients, in the form of cheſnut-ſhells; whence Vitruvius, and others, called it echinus, i. e. cheſnut-ſhell.

OUSTER LE MER, in law, ſignifies a cauſe of excuſe given to the court, on a defendant's not appearing upon ſummons, by alledging that he was then beyond the ſeas.

OUT-HOUSES, ſuch as belong and are adjoining to dwelling-houſes.

OUT-LAW, one that is deprived of the benefit of the law, and therefore held to be out of the king's protection.

OUT-LAWRY, is where a perſon is out-lawed, and on that account loſes the benefit of a ſubject.

OUTWORKS, in fortification, thoſe works made without ſide the ditch of a fortified place, to cover and defend it. Outworks, called alſo advanced and detached works, are thoſe which not only ſerve to cover the body of the place, but alſo to keep the enemy at a diſtance, and prevent his taking advantage of the cavities and elevations uſually found in the places about the counterſcarp, which might ſerve them either as lodgments, or as rideaux, to facilitate the carrying on the trenches, and planting their batteries againſt the place: ſuch are ravelines, tenailles, hornworks, queve d'arondes, envelopes, crown-works, &c.

It is a general rule in all outworks, that if there be ſeveral of them, one before another, to cover one and the ſame tenaille of a place, the nearer ones muſt gradually, one after another, command thoſe that are farther advanced out into the champaign, that is, muſt have higher ramparts that ſo they may overlook and fire upon the beſiegers, when they are maſters of the more outward works.

OVUM PHILOSOPHICUM, or CHYMICUM, a glaſs-body, of an oval form reſembling an egg, uſed for the ſublimation of mercury.

OWSE, among tanners, oaken bark beaten or ground ſmall, to ſerve in the preparation of leather.

OX, *Bos*, in zoology makes a genus of quadrupeds.

Oxen like other domeſtic animals, vary in colour, though the dun ſeems the moſt common; and the redder it is, the more it is eſteemed. A black coat is alſo valued; and bay oxen are ſaid to be vigorous and long lived; whereas the brown ſoon decay. The grey, the dappled, and the white, are proper only for the ſlaughter; no care can render them fit for labour; but whatever be the colour of an ox's coat, it ſhould be gloſſy, thick, and ſmooth to the touch; for if it be harſh, rough, or thin, there is reaſon to ſuppoſe that the animal is out of order, or at leaſt not of a ſtrong conſtitution. A good ox for the plough muſt be neither too fat nor too lean; the head ſhort and thick; the ears large and ſhaggy; the horns ſtrong, gloſſy, and of a middling ſize; the forehead wide, the eyes full and black; his muzzle large and flat; the noſtrils wide and open; the teeth white and even; the lips black; a fleſhy neck, large and heavy ſhoulders; the breaſt broad; the dew-lap hanging down to the knees; the reins very broad; a ſpacious deſcending belly; the flanks firm; the haunches large, and the rump thick; large and nervous thighs and legs; the back ſtraight and full; the tail reaching to the ground, and well covered with thick and fine hair; the feet firm; the hide thick and pliable; the muſcles raiſed; the hoof ſhort and broad: he muſt alſo anſwer to the goad, be obedient to the voibe, and well trained; but it is only gradually, and by beginning early, that the ox can be brought willingly to bear the yoke, and be eaſily governed. At the age of two years and a half, or three at the lateſt, you muſt begin to tame him, and bring him under ſubjection; if delayed longer, he becomes froward, and often ungovernable. The only method of ſucceeding is, by patience, mildneſs, and even careſſes; for compulſion and ill-treatment will only diſguſt him irreclaimably; ſtroking him gently along the back, clapping him, given him occaſionally boiled barly, ground beans, and ſuch other aliments as pleaſe him beſt, all of them mingled with ſalt, of which he is very fond, will prove of the greateſt uſe. At the ſame time his horns ſhould be often tied, and ſome days after the yoke is to be put on his neck, and faſtened to a plough, with another ox of the ſame ſize ready trained; theſe are to be tied together at the manger, and in the ſame manner led to the paſture, that they may become acquainted, and accuſtomed to have one common motion. The goad is never to be made uſe of in the beginning, as that would only render him more untractable; he muſt alſo be indulged, and labour only at ſhort intervals; for till he is thoroughly trained, he tires himſelf very much; and for the ſame reaſon he is to be fed more plentifully than at other times. An ox ſhould draw the plough only from his third to his tenth year, when it will be adviſeable to fatten and ſell him as being then of a better fleſh than if he was kept longer. The age of this creature is known by his teeth and horns. The firſt fore-teeth, which he ſheds at the end of ten months, are replaced by others; larger, but not ſo white; at ſix months the teeth next to thoſe in the middle fall out, and are alſo re-placed by others; and in three years all the inciſive teeth are renewed. They are then equal, long, and pretty white; but as the ox advances in years, they wear, become unequal and black. It is the ſame in the bull and cow; ſo that the growth and ſhedding of teeth are not affected by caſtration, or the difference of ſexes. Nor is the ſhedding of the horns affected by either; as both bull, ox, and cow, loſe them alike at the end of three years; and theſe alſo are re-placed by other horns, which, like the ſecond teeth, remain; only thoſe of the ox and cow are larger and longer than thoſe of the bull. The manner of the growth of theſe ſecond horns is not uniform, nor the ſhooting of them equal. The firſt year, that is the fourth year of the ox's age, two ſmall pointed horns make their appearance, nearly formed, ſmooth, and towards the head terminated by a kind of button. The following year this button moves from the head, being impelled by a corneous cylinder, which alſo lengthening, is terminated by another button, and ſo on; for the horns continue growing as long as the creature lives. Theſe buttons become annular joints, which are eaſily diſtinguiſhed in the horn, and by which the age of the creature may be readily known: counting three years for the point of the horn to the firſt joint, and one year for each of the other intervals.

* OXFORD, a city of Oxfordſhire, and the ſeat of the moſt noble univerſity in the world. It is ſaid to have been the ſeat of the Muſes, even in the time of the ancient Britons, and that Alfred the Great, after the Daniſh ſtorms were blown over, reſtored it to its former uſe, and built three colleges. Oxford was made a biſhop's ſee by Henry VIII. and St. Fridieſwide's church was turned into a cathedral, by the name of Chriſt-church, and he endowed it with the land belonging to the late monaſteries of Abingdon and Oſney. Beſides the cathedral, here are thirteen pariſh churches. As a corporation, it conſiſts of a mayor, high-ſteward, four aldermen, eight aſſiſtants, a recorder, two chamberlains, a town-clerk, and twenty-four common-council-men. The mayor in his juriſ-

diction is ſubordinate to the vice-chancellor of the univerſity for the time being. This city ſends two members to parliament. The univerſity contains twenty colleges and five halls, many of which are magnificent ſtructures, as are alſo the Theatre, Dr. Radcliffe's Library, Aſhmole's Muſeum, &c. The magiſtrates of the univerſity are the chancellor, high-ſteward, vice-chancellor, and proctors. The firſt is choſen for life, by the ſtudents themſelves in convocation. The high-ſteward is nominated by the chancellor, and approved by the univerſity; and his office is alſo for life. The vice-chancellor, who is always the head of ſome college, and in holy orders, is elected yearly in convocation. The proctors are two maſters of arts, choſen yearly, by turns, out of the ſeveral colleges, to keep the peace, to take up diſorderly perſons, and to overſee the weights and meaſures, that the ſtudents may not be impoſed on. This city is 68 miles E. by N. of Briſtol, 80 W. S. W. of Cambridge, 58 N. E. of Saliſbury, and 58 W. N. W. of London. Oxford is ſeated on an eminence, and the whole town, with the ſuburbs, is of a circular form, and about three miles in circumference, conſiſting chiefly of two ſpacious ſtreets croſſing each other at the middle of the town; and as ſeveral of the colleges ſtand in the ſtreets, from thence it receives a greater air of magnificence. The river is navigable from hence to London, and ſends great quantities of malt and corn thither by barges. It has two markets, on Wedneſdays and Saturdays; and three fairs, held on May 3, September 1, and Thurſday before Michaelmas, for toys and ſmall ware. Long. 1. 15. W Lat. 51. 45 N.

* OXFORDSHIRE, a county of England, bounded by Buckinghamſhire on the E. Berkſhire on the S. Glouceſterſhire on the W. and the counties of Northampton and Warwick on the N. It is about 38 miles in length from N. to S. and 25 in breadth from E. to W. the circumference being 130 miles. The principal rivers are the Tame and the Iſis, that run through the county; beſides which, there are the Cherwell, the Windruſh, the Evenlode, the Sarbrook, the Glyn, the Oke, the Stour, and other leſſer ſtreams. It is ſaid to contain 534000 acres of land, 14 hundreds, 280 pariſhes, and 12 market-towns. It ſends ten members to parliament; two for the city of Oxford, two for the univerſity, two for Banbury, two for Woodſtock, and two for the county. In general, this county yields plenty of corn and paſtures, beſides plenty of game. The air is ſweet, pleaſant, and mild.

OXGANG, or OXGATE, is generally taken in our old law-books, for fifteen acres, or as much ground as a ſingle ox can plough in a year.

OXYCRATE, *Oxycratum*, in pharmacy, &c. a mixture of vinegar and water, proper to aſſuage, cool, and refreſh: they make fomentations of oxycrate, clyſters of oxycrate, &c. The uſual proportion is one ſpoonful of vinegar to five or ſix ſpoonfuls of water.

OXYCROCEUM, in pharmacy, &c. a preparation much uſed in plaſters for fractures, &c. made as follows: take yellow wax, one pound; pitch and galbanum, each half a pound; melt them over a gentle fire; and then add of venice-turpentine, myrrh, and olibanum, each three ounces; ſaffron, two ounces: make them into a plaſter.

OXYMEL, in pharmacy, a compoſition of honey and vinegar, boiled to the conſiſtence of ſyrup.

OYER, in law-books, ſeems to have been anciently uſed for what is now called aſſizes.

OYER AND TERMINER, a commiſſion directed to the judge of aſſize, and other gentlemen, impowering them to hear and determine all criminal cauſes, and to try all offenders.

OYER *of a Deed*, a petition to hear and peruſe any deed, upon which an action is brought. This is always granted the defendant, who may alſo take a copy of it, that he may conſider what to plead to the action.

OYES, or OYEZ, ſignifies *hear*; and is frequently uſed by the cryers in courts, on making proclamation, or to enjoin ſilence.

OYSTER, or OISTER, *Oſtrea*, in zoology, a genus of bivalve ſhell-fiſh, the lower valve of which is hollowed on the inſide, and gibboſe without; the upper one is more flat; and both are compoſed of a multitude of laminæ or cruſts, and uſually ſcabrous or rough on the outer ſurface: ſome oyſter-ſhells are alſo furniſhed with tubercles, or ſpines, and others are deeply furrowed and plicated: the figure of moſt is roundiſh, but in ſome it is quite irregular.

Oyſter-ſhells are accounted drying and abſtergent; and given internally, ſudorific.

OZENA, a foul malignant ulcer of the noſe, which is ſometimes ſo exulcerated as to diſcharge a fœtid odor, with pieces of corrupted bones. An ozena is generally more violent and foul when attended with a caries of the bones; for, at firſt, the internal coat of the noſe only is ulcerated, but it extends itſelf inſenſibly into the ſlender bones, and often into the ſinuſes of the cranium, and the oſſa maxillaria, and excites a malignant caries. It generally ariſes from an obſtinate catarrh or ſome other diſorder of the noſe, eſpecially when the blood is affected with the ſcurvy, or venereal diſeaſe; but ſometimes from acrid ſubſtances drawn into the noſe with the air, and corroding its membrane, as ſtrong ſternutatory powders, and ſometimes it proceeds from, or is joined by a polypus. The ſigns of an ozena are diſcoverable from what has been already mentioned; but, for the event, the cure is certainly difficult, becauſe the bones, eſpecially the oſſa ſpongioſa, are ſurpriſingly tender, and not ſufficiently expoſed to view; in conſequence of which, the part affected cannot be properly cleanſed. For this reaſon the diſorder ſpreads, and at length corrodes the ſeptum, and other bones of the noſe in ſuch a manner, that the external part is deformed, and the faculties of ſpeech and reſpiration injured. Some have thought an ozena a ſufficient plea for a divorce. The cure muſt be performed not only by external, but alſo by internal medicines, to correct the blood, as antivenereals, of which mercurials and decoctions of the woods are the principal. The patient likewiſe muſt be ordered to uſe a diet moderate and light, neither ſtrong nor light ſeaſoned. When the caſe is venereal, ſalivation is the beſt remedy.

P.

P, A conſonant, and the fifteenth letter in the Engliſh alphabet; when followed by an *h* in the ſame word, it ſounds like an *f*, as in Philip, phraſe, &c.

The P is not ſounded in pſalms, Ptolemy, pſeudo, &c. nor the ph in phthiſic.

P, in the Italian muſic, denotes piano, ſoft; that is, the force of the voice or inſtrument is to be diminiſhed, ſo as to make a kind of echo. p p, piu piano, that is, more ſoft; and p p p, pianiſſimo, ſofteſt of all, or a third echo, the voice being almoſt loſt in the air.

P M. in aſtronomy, denotes poſt meridiem, or afternoon; ſometimes poſt mane, after morning, that is, after midnight.

P, in medicine, denotes pugil, or the eighth part of a handful.

P. Æ. in medicine, *partes æquales*, equal parts, the ſame with *a* or *ana*.

P P. in medicine, *pulvis patrum*, the Jeſuit's bark in powder, ſo called as they were the firſt who brought it into Europe.

PACE, *Paſſus*, a meaſure taken from the ſpace between the two feet of a man in walking; uſually reckoned two feet and a half, and in ſome men a yard, or three feet. The geometrical pace is five feet; and 60,000 ſuch paces make one degree of the equator.

PACE, in the manage, is of three kinds, viz. walk, trot, and gallop; to which may be added an amble, becauſe ſome horſes have it naturally.

PACK, in commerce, a quantity of goods, made up in loads, or bales, for carriage.

A pack of wool is ſeventeen ſtone and two pounds, or a horſe's load.

PACOS, in zoology, a ſpecies of Peruvian camel, without any gibboſity, erroneouſly reckoned by ſome a ſheep: it is only three feet and a half high, from the ground to the top of the back; but the neck is very long, ſo that when the head is carried erect it is pretty tall.

PACK, or Paction, *Pactum* in law, a contract, or agreement, between two or more parties.

PACTA Conventa, in Poland, the articles agreed on between the king and the republic, which they mutually oblige each other to obſerve.

PADDOC, or Paddoc Course, a piece of ground encompaſſed with pales or a wall, and taken out of a park for exhibiting races with grey-hounds, for plates, wagers, or the like.

* PADUA, a large, ancient, and celebrated city of Italy, with an univerſity, and a biſhop's ſee. It is alſo capital of the Paduano, but is not ſo conſiderable as it was formerly, for it now contains no more than 30,000 inhabitants, whereas it formery had 100,000, and many of the houſes are gone to ruin: however, the hall where juſtice is adminiſtered, is a ſuperb ſtructure. The cathedral church, and the college of the univerſity, are in that part called the Old Town; and there are piazzas under all the houſes, where perſons may walk without being expoſed to the weather. The garden of the univerſity is curious, on account of the number of plants. Here a ſtudent may take his degrees, let him be of what ſect of Chriſtianity he will; nay, though he ſhould be a Jew or a Turk. The patron of this city is St. Anthony, who lies in the cathedral; they have ſuch a veneration for him, that the beggars do not aſk charity in the name of God, but for the love of St. Anthony. The Jews live in a diſtinct part of the city, and the neighbouring mountains produce excellent wine and oil, with delicious fruits. It was taken by the Venetians in 1706. It is ſeated on the Brentac and Bachiglione, in a fine plain, and is about ſeven miles in circumference, twenty ſouth-eaſt of Vicenza, and 225 north of Rome. Long. 12. 20. E. Lat. 45. 24. N.

PADUS, the laurel, or birds cherry in botany, a genus of plants.

PÆAN, among the ancient pagans, a ſong of rejoicing ſung in honour of Apollo, chiefly uſed on occaſions of victory and triumph.

PÆDARTHROCACES, in ſurgery, a diſeaſe of the bones, raiſing them into tumors near the joints, and differing from the ſpina ventoſa, not being attended either with violent pains, or eroſions of the bone and adjacent parts. The bones of children, being ſofter than thoſe of adults, are therefore the more eaſily diſtended by humours, and more frequently raiſed into tumors: theſe are hard in this caſe, and the adjacent ſoft parts are not inflated and are free from redneſs, inflammation, and pain. It is, however, to be obſerved, that this diſorder, though at firſt very different from the ſpina ventoſa, is ſometimes known to degenerate into that diſorder. *Heiſter's Surgery.*

PÆDO-BAPTISM, infant-baptiſm, or that conferred on children.

PEONIA, male and female peony, or piony. They are both found wild in ſome parts of Europe, and cultivated with us in gardens: they are perennial, produce their flowers in May, and very ſoon ſhed them. The male peony has been generally preferred for medicinal uſe; but the female, which is the largeſt and moſt elegant, and for this reaſon the moſt common, is the ſpecies which the ſhops have been principally ſupplied with. In quality, there does not appear to be any material difference betwixt the two; and hence the college allow both ſorts to be taken indiſcriminately.

PAGAN, *Paganus*, a heathen, gentile, or idolater; one who adores falſe gods.

PAGANALIA, certain feſtivals obſerved by the ancient Romans in the month of January. They were inſtituted by Servius Tullius, who appointed a certain number of villages (pagi), in each of which an altar was to be raiſed for annual ſacrifices to their tutelar gods; at which all the inhabitants were to aſſiſt, and give preſents in money, according to their ſex and age, by which means the number of country-people was known. The ſervants upon this occaſion offered cakes to Ceres and Tellus, to obtain plentiful harveſts.

PAGANISM, the religious worſhip and diſcipline of pagans; or, the adoration of idols and falſe gods. The gods of paganiſm were either men, as Jupiter, Hercules, Bacchus, &c. or fictitious perſons, as Victory, Fame, Fever, &c. or beaſts, as in Egypt, Crocodiles, Cats, &c. or finally, inanimate things, as Onions, Fire, Water, &c.

PAGE, a youth of ſtate retained in the family of a prince or great perſonage, as an honourable ſervant, to attend in viſits of ceremony, do meſſages, bear up trains, robes, &c. and at the ſame time to have a genteel education, and learn his exerciſes. The pages in the king's houſhold are various, and have various offices aſſigned them, as pages of honour,

nour, pages of the preſence-chamber, pages of the back-ſtairs, &c.

PAGEANT, a triumphal car, chariot, arch, or other like pompous decoration, variouſly adorned with colours, flags, &c. carried about in public ſhews, proceſſions, &c.

PAGOD, or PAGODA, a name whereby the Eaſt Indians call the temple in which they worſhip their gods. The pagod uſually conſiſts of three parts, the firſt is a vaulted roof ſupported on ſtone or marble-columns. It is adorned with images, and, being open, all perſons without diſtinction are allowed to enter it: the ſecond part is filled with groteſque and monſtrous figures, and nobody is allowed to enter it but the bramins themſelves: the third is a kind of chancel, in which the ſtatue of the deity is placed: it is ſhut up with a very ſtrong gate. This word is ſometimes uſed for the idol, as well as for the temple.

PAGOD, or PAGODA, the name of a gold and ſilver coin, current in ſeveral parts of the Eaſt Indies.

PAIN, *Dolor*, an uneaſy ſenſation ariſing from a ſudden and violent ſolution of the continuity, or ſome other accident in the nerves, membranes, veſſels, muſcles, &c. of the body; or, according to ſome, it conſiſts in a motion of the organs of ſenſe; and, according to others, it is an emotion of the ſoul occaſioned by theſe organs. There are various kinds of pain, one is attended with pulſation, another with a ſenſe of incumbent weight, another with a tenſion; there is a pain which attends eroſion, inciſion, punction, and perforation, comprehended with theſe and the like differences under the name acute; and, laſtly, there is a pain attended with a torpor and numbneſs. Beſides the above-mentioned, there are other diſtinctions of pain: thus ſome pains are fixed, others moveable and wandering, as it often happens in a redundance of humours; ſome pains are continual, and others intermittent; ſome intenſe, others remiſs: ſome again afflict the patient in the beginning of the diſeaſe, others afterwards; and ſometimes they ariſe on the critical day, ſometimes not; and to mention no more, ſome pains are ſeated in the external parts, others in the internal; ſome in the noble, others in the ignoble parts.

PAIN FORT ET DURE, in law, ſignifies a particular puniſhment inflicted on a perſon who being arraigned for felony, refuſes to put himſelf upon the common trial of God and his country, but inſtead thereof obſtinately ſtands mute: this puniſhment is vulgarly called preſſing to death. By a late act of parliament, thoſe who ſtand mute are to be holden as guilty, and convicted of the crimes with which they are charged.

PAINTING, *Pictura*, the art of repreſenting figures, countries, towns, and other things in colours. Painting is doubtleſs ancient as well as ſculpture, but it is hard to know the real time and place where they began to appear. The Egyptians and Greeks, ſays Rollin, who pretend to be the inventors of thoſe arts which are moſt for the ſplendor of life, pretend that they were the firſt carvers and painters; however it is certain that painting, after having ſome weak beginnings, appeared in its perfection among the Greeks, and that the principal ſchools, where this art was taught, were at Sicyone, a town of Peloponneſus, at Rhodes, and Athens: from Greece it paſſed into Italy, where it was in great eſteem about the end of the republic, and under the firſt emperors, until at laſt, war and luxury having diſmembered the Roman empire, it became extinct, as well as other ſciences and arts, and did not begin to revive again, till the famous Cimabue laboured at it, and recovered from the hands of certain Greeks, ſome ſlender remains of this art. Some Florentines, having ſeconded him, were thoſe that gained moſt reputation, yet it was long before any conſiderable painting was produced. Le Ghirlandais, Michael Angelo's maſter, acquired the moſt credit; but Michael Angelo, his ſcholar, in the time of pope Julius II. at the beginning of the fifteenth century, eclipſed the glory of all that went before him, and erected a ſchool at Florence. Peter Perugin and Raphael de Urbin, who excelled him very much, and even Michael Angelo himſelf, formed a ſchool at Rome, conſiſting of ſeveral excellent painters; at the ſame time the ſchool of Lombardy was ſet up, and was famous under Georgione and Titian, who had Julian Bellino for his maſter; beſides which, there were alſo in Italy ſome other particular ſchools, under different maſters; amongſt the reſt, that of Leonardo de Vinci at Milan, but the three firſt are eſteemed the moſt famous, the reſt having proceeded from them; but over and above theſe, there were on this ſide the mountains ſome painters who had nothing to do with thoſe of Italy, as Albert

Durer in Germany, Holbens in Swiſſerland, Lucas in Holland, and ſeveral others that wrought in France and Flanders, in a different manner; but Italy, and Rome eſpecially, was the place where this art was practiſed in its greateſt perfection, and where from time to time were brought up excellent painters The ſchool of Raphael was ſucceeded by that of Carrachio, which hath almoſt laſted till now in its height and perfection; but at preſent there is little of it in Italy, this art ſeeming to have paſſed into France, ſince Lewis XIV. hath ſet up acad mies for thoſe that practiſe it. We have ſaid before, that the firſt invention of this art of painting is not certainly known; but it is agreed, that he who firſt attempted drawing, made his firſt eſſay upon a wall, by drawing the ſhadow of a man, which the light diſcovered; and to give the greater beauty to this ſtory, ſome write that it was a girl who thus deſigned the face of her lover. Some alledge that it was one Philocles, of Egypt, who firſt reduced this invention into practice; others name Cleanthes of Corinth, and others again ſay, that Ardices a Corinthian, and Telephanes, of Clarentia, in Peloponneſus, began to draw without colours, with a coal only; and that the firſt who made uſe of one colour in painting, was one Cleophantes of Corinth, and for that reaſon called Monochromatos: after him, it is ſaid that Higienontes, Dinias, and Charmas, were the firſt that drew pictures in one colour only. Eumarus of Athens, at laſt, painted both men and women in a different manner; his diſciple, Simon, the Cleonian, began to paint the body in various poſtures, and to repreſent the joints and limbs, the veins, and the foldings of the drapery; however, it is certain, that in the time of Romulus, and about the fifteenth Olympiad, that is, 715 years before Chriſt's incarnation, Candaules, ſirnamed Myrſilus, king of Lydia, bought, for its weight in gold, a picture of Bularchus's painting, in which was repreſented the battle of the Magneſians. Panæus, the brother of Phidias, was in eſteem in the eighty-third Olympiad, 448 years before our Saviour. Polygnotus, the Thaſian, was the firſt that put thought and paſſion into the face, and gave force and beauty to the colours; he did ſeveral things at Delphos and Athens. At the ſame time Mycon made himſelf famous, alſo, in Greece. About the ninetieth Olympiad appeared Agleophon, Cephiſſodones, Phrillus, and Evener, the father of Parrhaſius; all theſe painters were excellent in the art, but Apollodorus exceeded them all; he lived in the ninety-third Olympiad, 408 years before the birth of our Lord; his manner was imitated by Zeuxis, Parrhaſius, the great Apelles, and ſeveral others, till the reign of Auguſtus. It is not known what painters have wrought in Italy ſince the reign of this emperor. When the Conſtantines and Theodoſius took upon them the protection of the church, theſe Chriſtian emperors cauſed ſome carving and painting works to be made for the ornaments of the churches, but we have almoſt nothing conſiderable of the remains of thoſe pieces. It is probable, one reaſon of the decay of painting was occaſioned by the ſecond council of Nice's decreeing religious worſhip to be paid to the images of our Saviour and the ſaints: this practice being looked on by a great part of the church as a dangerous and unwarrantable innovation, ſeveral of the Greek emperors made a vigorous oppoſition againſt it; and the better to ſuppreſs theſe exceſſes, ordered the images, &c. to be taken out of the churches and defaced; and by this means the art itſelf fell under a great diſcouragement. But, after the year 1270, the famous Cimabue reſtored the art of painting, which was perfected by the painters of the ſucceeding age. About the beginning of the fifteenth century, there were famous painters in the Low-Countries, and in Germany. *Rollin.*

Cleaning Pictures and PAINTINGS.—The art of cleaning pictures and paintings, though of great conſequence to the preſerving valuable works of that kind, has been very little underſtood even by thoſe who profeſs to practiſe it; on which account many valuable pictures have been damaged: and indeed few eſcape without damage, in a greater or leſs degree, which come under the hands of thoſe who pretend to make it their buſineſs; and yet moſt generally know no other than one ſingle way of treating all the ſubjects they are to operate upon, however different may be the condition or circumſtances of them. As a painting may be, however, fouled with a variety of different kinds of matter, many of which will not be diſſolved, or ſuffer their texture to be deſtroyed by the ſame ſubſtances, it is neceſſary to know what will diſſolve or corrode each kind; for there is no other means of removing, or taking off any foulneſs, than by diſſolving or corroding by ſome proper menſtruum, the matter which conſtitutes it, except by actual violence, which the tender nature of oil paintings by no means ſuffer them to bear. Of theſe ſubſtances, which will remove, by diſſolving or corroding it, the matter which may foul paintings, ſome are very apt likewiſe to act upon and diſſolve the oil in the painting itſelf; and conſequently to diſorder or bring off the colours; while others are, on the contrary, paſſive and innocent, with reſpect to the painting; and may be uſed freely, or indeed in any quantity whatever, without the leaſt inconvenience of this kind. As paintings to be cleaned are likewiſe varniſhed with a variety of ſubſtances of different natures, which ſometimes require to be taken off, and at other times are much better left remaining, it is very neceſſary to be able to judge what is beſt to be done in this point; as likewiſe to know the means by which each ſort of varniſh may be taken off without injury to the painting: for in fact, without this there is no way of cleaning pictures, in ſome circumſtances, but by ſcouring till, as well the ſurface of the picture as the foulneſs be cleared away. We ſhall therefore firſt give ſome account of the nature of the ſubſtances which are, or may be, uſed for cleaning paintings in oil, as it regards this application of them; and then ſhew how they may be uſed, as well for the taking off the varniſh, as the removing any foulneſs that may be either upon or under it.

The firſt and moſt general ſubſtance uſed for cleaning pictures is water. This will remove many kinds of glutinous bodies, and foulneſs ariſing from them; ſuch as ſugar, honey, glue, and many others, and alſo take off any varniſh of gum-arabic, glair of eggs, and iſinglaſs; and is therefore the greateſt inſtrument in this work. It may be uſed without any caution, with regard to the colours, as it will not in the leaſt affect the oil which holds them together.

Olive oil, or butter, though not applied to this purpoſe, through an ignorance of their efficacy, will remove many of thoſe ſpots or foulneſs which reſiſt even ſoap; as they will diſſolve or corrode pitch, roſin, and other bodies of a like kind, that otherwiſe require ſpirit of wine, and oil of turpentine, which endanger the painting: and they may be uſed very freely, not having the leaſt effect on the oil of the painting.

Wood-aſhes, or what will better anſwer the purpoſe, when uſed in a proper proportion, pearl-aſhes, being melted in water, make a proper diſſolvent for moſt kinds of matter which foul paintings; but they muſt be uſed with great diſcretion, as they will touch or corrode the oil of the painting, if there be no varniſh of the gum-reſins over it, ſo as to render the colours liable to be injured by very little rubbing. The uſe of them, or ſoap, is, however, in many caſes unavoidable, and in general they are the only ſubſtances employed for this purpoſe.

Soap is nearly of the ſame nature with the laſt-mentioned ſubſtances; being indeed only oil incorporated with ſalts of the ſame kinds, rendered more powerfully diſſolvent by means of quick-lime: for which reaſon it is ſomething more efficacious; but conſequently more hazardous, as it will the ſooner get hold of the oil of the paintings. It ſhould, therefore, not be uſed but on particular ſpots, that elude all other methods, and there with great caution.

Spirit of wine, as it will diſſolve all the gums, and gum-reſins, except gum-arabic, is very neceſſary for the taking off from pictures varniſhes compoſed of ſuch ſubſtances, but it corrodes alſo the oils of the paintings, and ſoftens them in ſuch a manner, as makes all rubbing dangerous while they are under its influence.

Oil of turpentine will likewiſe diſſolve ſome of the gums uſed for varniſh; but ſpirit of wine will in general much better anſwer that purpoſe. There are, however, ſometimes ſpots of foulneſs, which will give way to ſpirit of turpentine, that reſiſt moſt other ſubſtances uſed in this intention; and it may, therefore, be tried where they appear to fail, but very ſparingly, and with great caution, as it will very ſoon act even on the dry oil of the painting.

Eſſence of lemons has the ſame powers as oil of turpentine; but is, moreover, a much ſtronger diſſolvent, and ſhould therefore only be uſed in deſperate caſes, where ſpots ſeem indelible with regard to all other methods. Spirit of lavender and roſemary, and other eſſential oils, have the ſame diſſolving qualities as eſſence of lemons; but they are in general dearer, and ſome of them too powerful to be truſted near the colours.

Whenever paintings are varniſhed with gum-arabic, glair of eggs, or iſinglaſs, the varniſh ſhould be taken off when they are to be cleaned. This may be eaſily diſtinguiſhed by wetting any part of the painting, which will feel clammy, if varniſhed with any ſubſtance diſſolvible in water. In ſuch caſes, the taking off the varniſh will frequently alone render the painting entirely clean; for if it has been laid on thick, and covered the ſurface every where, the foulneſs muſt neceſſarily lie upon it. The manner of taking off this kind of varniſh muſt be done by means of hot-water and a ſponge, the picture, or painting being laid horizontally. The water may be nearly boiling hot, and may be uſed copiouſly at firſt with the ſponge; but when the varniſh appears to be ſoftened, and the painting more naked, it ſhould be uſed cooler; and, if the varniſh adhere, ſo as not to be eaſily brought off by a ſponge, a gentle rubbing with a linen cloth may be uſed; the cloth being frequently wrung, and wet again with freſh water a little warmiſh.

When paintings appear, by the above trial, to be varniſhed with the gum-reſins, or ſuch ſubſtances as cannot be diſſolved in water, it is proper, nevertheleſs, to waſh them well with water pretty warm, by means of a ſponge, which will ſometimes be alone ſufficient to clean them, even in this caſe: but if there yet appear any foulneſs, rub the painting over with olive oil made warm, or butter; and if any parts appear ſmeary, or any foulneſs ſeem to mix with the oil or butter, purſue the rubbing gently, taking off the foul oil, and adding freſh till all ſuch foulneſs be wholly removed. Let the oil be then wiped off with a woollen cloth, and if the picture require further cleaning, the wood-aſhes, or pearl-aſhes, muſt be uſed in the following manner; which, indeed, as to the firſt part, is not widely different from the method commonly uſed.

“Take an ounce of pearl-aſhes, and diſſolve them in a pint of water; or take two pounds of wood-aſhes, and add to them three quarts of water, and ſtir them well in the water once or twice in an hour, for half a day; and then, when the earthy part of the aſhes has ſubſided, pour off the clear fluid, and evaporate it to a quart; or if it appears acrid to the taſte at that time, three pints may be left. Waſh, by means of a ſponge, the painting well with either of theſe ſolutions, or lyes, which are in fact the ſame thing, made warm; and rub any particular ſpots of foulneſs gently with a linen cloth till they diſappear: but if they appear to remain unchanged by the lye, do not endeavour to take them off by mere force of rubbing; for that would infallibly damage the colours under the ſpots, before they could be removed: but in this caſe they ſhould be left to be tried by the ſpirit of wine, or the eſſential oils of turpentine and lemons. Where thick ſpots ſeem to give way in part, but yet reſiſt in a degree to this lye, a little ſtrong ſoap-ſuds may, in ſome caſes, be uſed, with great caution; but it ſhould be prevented as much as poſſible from touching any part of the painting, except the ſpot itſelf; and as that diſappears, the ſoap-ſuds ſhould be diluted with water, that it may not reach the oil of the colours in its full ſtrength. If, however, all this be done upon a ſtrong coat of varniſh, there will be leſs hazard; and, in ſuch caſes, the waſhing freely with the wood-aſh lye, or weak ſoap-ſuds, will frequently do the buſineſs effectually, without any material damage: but it requires ſome judgment to know where paintings may be freely treated; and, with reſpect to thoſe of great value, it is always beſt to proceed by more circumſpect methods, and to try the more ſecure means we have above directed, before theſe rougher be uſed.”

Some uſe the wood-aſhes, with the addition of water only, without ſeparating the ſolution of the ſalts from the earth; which, when ſo uſed, aſſiſts in ſcrubbing the foulneſs from the painting; but all ſuch practices are to be condemned; as the finer touches of the painting are always damaged in a greater or leſs degree, where any abrading force is employed in cleaning it.

Where ſpots appear, after the uſe of all the above-mentioned methods, ſpirit of wine, or if that fail, oil of turpentine, and in the further caſe of its default, eſſence of lemons muſt be applied. The ſpots ſhould be lightly moiſtened with them, avoiding to ſuffer them to touch any more of the ſurface than what is covered with the foulneſs; and the part ſhould be immediately rubbed with a linen cloth, but very gently; obſerving at the ſame time to deſiſt, if the colours appear the leaſt affected. After a little olive oil ſhould be put on the ſpot, where oil of turpentine and eſſence of lemons are uſed, and water where ſpirit of wine is applied: which being taken off by a woollen cloth, if the foulneſs be not wholly removed, but appears to give way, the operation muſt be repeated till it be entirely obliterated.

Where paintings appear to have been varniſhed with thoſe ſubſtances that will not diſſolve in water, and after the careful uſe of the above means the foulneſs ſtill continues, or where, as is very often found, the turbidneſs, or want of tranſparency, or the yellow colour of the varniſh, deprave the painting ſo as to deſtroy its value, ſuch varniſh muſt be taken off; the doing of which, though attended with the greateſt difficulty to thoſe who proceed by the methods now in uſe, and which indeed is ſeldom done by them at all, but with the deſtruction of the more delicate teints and touches of the painting, is yet very eaſily and ſafely practicable by the following method:

"Place the picture or painting in an horizontal ſituation, and moiſten, or rather flood, by means of a ſponge, the ſurface with very ſtrong rectified ſpirit of wine; but all rubbing, more than what is neceſſary to ſpread the ſpirit over the whole ſurface, muſt be avoided. Keep the painting thus moiſtened, by adding freſh quantities of the ſpirit for ſome minutes; then flood the whole ſurface copiouſly with cold water; with which, likewiſe, the ſpirit, and ſuch part of the varniſh as it has diſſolved, may be waſhed off. But in this ſtate of it, all rubbing, and the ſlighteſt violence on the ſurface of the painting, would be very detrimental. When the painting is dry, this operation muſt be repeated at diſcretion, till the whole of the varniſh be taken of."

In pictures and paintings which have been long varniſhed, it will be found ſometimes that the varniſh has been a compoſition of linſeed-oil, or ſome other ſubſtantial oil, with gums and reſins. If ſuch paintings cannot be brought to a tolerable ſtate by any of the above-mentioned means, which may in this caſe be freely uſed, the miſchief may be deemed to be without remedy. For it is abſolutely impracticable to take off ſuch varniſh, as it is more compact and indiſſoluble than the oil of the painting itſelf; and could only be wrought upon by thoſe menſtrua and diſſolvents, which would act more forcibly on the paintings: ſuch pictures muſt, therefore, be left in the ſtate they are found, except by being freed from any foulneſs that may be upon this varniſh, and may be cleaned away by the methods we have before directed. The coat of this varniſh may indeed be ſometimes made thinner, by anointing the ſurface of the painting with eſſence of lemons; and then putting on olive-oil, which, when rubbed off by a ſoft woollen-cloth, will carry away the eſſence with ſuch part of the varniſh as it may have diſſolved; but this requires great nicety, and can never be practiſed without ſome hazard of diſordering the colours of the painting.

Method of taking off PAINTINGS *in Oil, from the Cloths or Wood on which they were origindlly done; and transferring them entire, and without Damage, to new Pieces.* The art of removing paintings in oil from the cloth or wood on which they are originally done, and transferring them to new grounds of either kind of ſubſtance, is of very great uſe; as not only pictures may be preſerved, where the canvas is ſo decayed and damaged, that they would otherwiſe fall to pieces; but paintings on ceilings or wainſcot, which, when taken away from the places where they were originally placed, would have little value, may be conveyed to cloths; and by being thus brought to the ſtate of other pictures, become of equal worth with thoſe painted originally on canvas. The manner in which this is done, is by cementing the face of the picture to a new cloth, by means of ſuch a ſubſtance as can afterwards be diſſolved, and conſequently taken off by water; deſtroying the texture of the old cloth, by means of a proper corroding fluid; and then ſeparating the corroded parts of it entirely from the painting: after which, a new cloth being cemented to the reverſe of the painting in its place, the cloth cemented to the front is in like manner to be corroded, and ſeparated; and the cemented matter cleanſed away by diſſolving it with water, and rubbing it off from the face of the picture. The particular method of doing this, with moſt convenience, is as follows.

Let the decayed picture be cleanſed from all greaſe that may be on its ſurface; which may be done by rubbing it very gently with crumbs of ſtale bread; and then wiping it with a very fine ſoft linen cloth. It muſt then be laid, with the face downwards, on a ſmooth table covered with fan paper, or the India paper; and the cloth on the reverſe muſt be well ſoaked with boiling water, ſpread upon it by means of a ſponge, till it appears

pears perfectly ſoft and pliable. The picture is then to be turned with the face upwards; and, being ſtretched in the moſt even and flat manner on the table, muſt be pinned down to it in that ſtate, by nails driven in through the edge, at proper diſtances from each other. A quantity of glue ſhould be then melted, and ſtrained through a flannel cloth, to prevent any gravel, or other impurities, from lurking in it; and when it is a little ſtiffened, a part of it ſhould be ſpread on a linen cloth, of the ſize of the painting, where it ſhould be ſuffered to ſet and dry; and then another coat put over it: when this is become ſtiff alſo, the glue ſhould be again heated; and while it remains of ſuch heat as to be eaſily ſpread, it ſhould be laid over the face of the picture, and a linen cloth immediately put over it in the moſt even manner, and nailed down to the picture and table at the edge likewiſe. The glue ſhould not be uſed boiling hot, as that would hazard ſome of the more delicate colours of the painting; and the linen cloth ſhould be fine and half worn, that it may be the ſofter, and lie the flatter on the ſurface of the picture: in order to which, it is proper to heat it till the glue be ſoft and pliable before it be laid on, and to compreſs each part gently with a ball, formed of a linen rag tied round with thread. The table, with the picture, cloth, &c. nailed down to it in this ſtate, ſhould be then expoſed to the heat of the ſun, in a place where it may be ſecured from rain, and there continued till the glue be perfectly dry and hard; at which time the nails ſhould be drawn, and the picture and linen cloth taken off from the table. The picture muſt now be again turned with the face downwards, and ſtretched and nailed to the table as before; and a border of wax muſt be raiſed round the edge, forming as it were a ſhallow trough with the ſurface of the picture, into which trough ſhould be poured a proper corroding fluid, to eat and deſtroy the threads of the original canvas or cloth of the picture. The corroding fluid uſed for this purpoſe may be either oil of vitriol, aquafortis, or ſpirit of ſalt; but the laſt is preferable, as it will more effectually deſtroy the thread, when it is ſo weakened by the admixture of water, as not to have any effect on the oil of the painting; which ever is uſed, it is neceſſary they ſhould be properly diluted with water: to find the due proportion of which, it is expedient to make ſome previous trials; and when they are found to be of ſuch ſtrength as to deſtroy the texture of thread without diſcolouring it, they are in the due ſtate. When the corroding fluid has done its office, a paſſage muſt be made through the border of wax at one end of it; and the fluid muſt be poured off, by inclining the table in the requiſite manner; and the remaining part muſt be waſhed away, by putting repeated quantities of freſh water upon the cloth. The threads of the cloth muſt then be carefully picked out till the whole be taken away; but if any part be found to adhere, all kind of violence, even in the leaſt degree, muſt be avoided in removing them; inſtead of which, they ſhould be again touched, by means of a pencil, with a corroſive fluid leſs diluted than before, till they will readily come off from the paint. The reverſe ſurface of the painting being thus wholly freed from the old cloth, muſt be then well waſhed with water, by means of a ſponge, till the corroding fluid employed be thoroughly cleanſed away; when being wiped with a ſoft ſponge, till all the moiſture that may be collected by that means be taken off, it muſt be left till it be perfectly dry. In the mean time a new painting, which now remains cemented to the linen cloth, put on the ſurface of it; and the reverſe of the painting being dry, and ſpread over by ſome hot glue, purified as before, and melted with a little brandy or ſpirit of wine, the new canvas muſt be laid on it, in the moſt even manner, while the glue yet remains hot, and ſettled to it by compreſſion; which may be performed by thick plates of lead, or flat pieces of poliſhed marble. Great care ſhould, however, be taken in the laying them on, to prevent the edge from cutting or bruiſing the paint; as alſo, during the ſetting of the glue, to take them off; and wipe them at proper intervals, to prevent their adhering to the cloth by means of the glue, which may be preſſed through it. The lead or marble, by which the compreſſure is made, being removed when the glue is ſet, the cloth muſt be kept in the ſame ſtate till the glue be perfectly dry and hard; and then the whole muſt be again turned with the other ſide upwards, and the border of wax being replaced, the linen cloth, on the face of the painting, muſt be deſtroyed by means of the corroding fluid, in the ſame manner as the canvas was before; but greater care muſt be taken with reſpect to the ſtrength of the corroding matter, and in the picking out the threads of the cloth; becauſe the face of the painting is deſended only by the coat of glue which cemented the linen cloth to it. The painting muſt then be freed from the glue, by waſhing it with hot water, ſpread and rubbed on the ſurface by a ſponge; which ſhould be cleanſed frequently during the operation, by dipping and ſqueezing it in clean water. The painting may afterwards be varniſhed as a new picture; and if the operation be well conducted, it will be transferred to the new cloth in a perfect ſtate.

When the painting is originally on wood, it muſt be firſt detached from the ceiling or wainſcot, where it was fixed, and the ſurface of it covered with a linen cloth, cemented to it by means of glue, in the manner before directed for the paintings on canvas. A proper table being then provided, and overſpread with a blanket, or thinner woollen cloth, if laid ſeveral doubles, the painting muſt be laid upon it with the face downwards, and fixed ſteady; and the boards or wood on which it was done muſt be planed away, till the ſhell remain as thin as it can be made, without damaging the paint under it. The proceedings muſt afterwards be the ſame as was before practiſed in the caſe of the paintings on canvas, till that on the wood be in like manner transferred to a cloth or canvas.

The whole of the above operation muſt be managed with the greateſt care, otherwiſe the painting will receive ſome damage: and ſo much nicety is required in the corroſion, and taking off the threads of the cloth, that it can ſcarcely be performed rightly, but by ſuch as have had ſome experience in the matter. It is proper, therefore, for any perſon who would practiſe it in the caſe of valuable paintings, to try it firſt with ſome old pictures of little value, till they find they have the right method of proceeding: and even then, in ſome inſtances, where the coats of paint lie very thin on the cloth, it is ſcarcely practicable without miſcarriage. But, as in the caſe of pictures greatly decayed, or paintings on wood taken from buildings that do not admit of being commodiouſly replaced elſewhere, there can be no great loſs, if a failure ſhould happen; and a conſiderable advantage may accrue, if the experiment ſucceed; for which there is good chance, if the operation be properly conducted, and the ſubject favourable; it is very well worth while to make the trial.

PAIR, *Par*, two equal or ſimilar things joined together either collectively, as a pair of gloves, or two ſimilar parts that compoſe one whole, or a ſet of things joined to make another complete, &c.

PAIR, in anatomy, an aſſemblage of two nerves, having their origin in the brain or ſpinal marrow, and thence diſtributed into the ſeveral parts of the body; one on one ſide, and the other on the other.

PALACE, *Palatium*, a name generally given to the dwelling houſes of kings, princes, biſhops, and other great perſonages; and taking different epithets, according to the quality of the inhabitants, as imperial palace, royal palace, pontifical palace, cardinal palace, ducal palace, epiſcopal palace, &c.

PALÆSTRA, in Grecian antiquity, a public building, where the youth exerciſed themſelves in wreſtling, running, playing at quoits, &c.

PALANQUIN, a kind of chaiſe, or chair, borne by men on their ſhoulders, much uſed by the people of China, and the Eaſt, as a vehicle for their eaſy conveyance from place to place.

PALATE, *Palatum*, in anatomy, the fleſh that compoſes the roof, or the upper or inner part of the mouth.

Wounds of the palate, and other parts of the mouth, are only to be healed by being anointed with honey of roſes, either alone, or mixed with balſam of Peru, or with oil of myrrh per deliquium.

* PALATINATE, a conſiderable province of Germany, divided into Upper and Lower. The Upper Palatinate, is likewiſe called the Palatinate of Bavaria; and the Lower Palatinate, is an electorate. It is about 100 miles in length, and 70 in breadth, and the principal rivers are the Rhine and the Neckar, beſides ſeveral other ſmaller ſtreams. It is not a very rich country, though there are very fine vineyards, fertile fields, handſome foreſts, good gardens, and the rivers and lakes abound in fiſh; beſides, there are cattle, game, and wild fowl; however, there are neither mines nor ſalt-works. In general, the Lower Palatinate has ſuffered more by the preceding wars with France, than all the provinces of Germany put together; for the French have plundered the country, and demoliſhed ſome of its fine towns more

than once. The Papiſts, Calviniſts and Lutherans have an equal right of toleration in this country. This Palatinate conſiſts of 13 bailiwicks. Theſe are all comprehended in the circle of the Lower Rhine; but on the eaſtern ſide of that river the elector poſſeſſes the principality of Simern and the bailiwick of Kreutznach and Kirkburg. The revenue of the elector is almoſt 300,000 l. a year.

PALE, *Palus*, a little pointed ſtake or piece of wood, uſed in making incloſures, ſeparations, &c.

PALE, in heraldry, one of the honourable ordinaries of an eſcutcheon; being the repreſentation of a pale or ſtake placed upright, and comprehending the whole height of the coat from the top of the chief to the point.

PALED FLOWERS, in botany, thoſe which have their leaves ſet about, or ſurrounding, an head, or thrum, as in marigolds, &c.

* PALES, in pagan worſhip, the goddeſs of the ſhepherds, to whom they offered milk and honey, in order to induce her to deliver them and their flocks from wild beaſts and infectious diſeaſes. This goddeſs is repreſented as an old woman.

PALILIA, a feaſt among the ancient Romans, in honour of the goddeſs Pales.

The palilia were celebrated with great feſtivity by the ſhepherds on the firſt of May, to beſeech that goddeſs to take care of their flocks, and preſerve them from wolves and diſeaſes. Part of the ceremony conſiſted in burning heaps of ſtraw, and jumping over them.

PALING, a ſort of fencing for fruit-trees planted in fields, wherein three ſmall poſts are erected at a foot and a half diſtance one from another, and near the top nailed to each other with croſs-bars.

PALISADE, or PALISADO, in fortification, an incloſure of ſtakes or piles driven into the ground, each ſix or ſeven inches ſquare, and eight feet long, three whereof are hid under ground. Paliſadoes are generally uſed to fortify the avenues of open forts, gorges, half-moons, the bottoms of ditches, the parapets of covert-ways, and in general all poſts liable to ſurprize, and to which the acceſs is eaſy. Paliſadoes are uſually planted perpendicularly, though ſome make an angle inclining towards the ground next the enemy, that the ropes caſt over to tear them up may ſlip.

Turning PALISADES is an invention of M. Coehorn, in order to preſerve the paliſades of the parapet of the covert-way from the beſiegers ſhot. He orders them ſo, that as many of them as ſtand in the length of a rod, or in about ten feet, turn up and down like traps, ſo as not to be in ſight of the enemy, till they juſt bring on their attack, and yet are always ready to do the proper ſervice of paliſades.

PALISADE, in gardening, a ſort of ornament; being a row of trees which bear branches and leaves from the bottom, cut and ſpread in manner of a wall along the ſide of an alley, or the like, ſo as to appear like a wall covered with leaves.

PALL, in heraldry, a kind of croſs repreſenting the pallium, or archiepiſcopal ornament ſent from Rome to the metropolitans.

PALLADIUM, in antiquity, a ſtatue of the goddeſs Pallas, ſuppoſed to have dropped down from heaven, preſerved in Troy, whereon the fate of that city is ſaid to have depended.

PALLET, among painters, a little oval piece of wood, &c. very thin and ſmooth; on which they place the colours they have occaſion for, ready for the pencil; it has a hole at one end to put the thumb through, to hold it.

PALLET, among potters, crucible makers, &c. a wooden inſtrument, almoſt the only one they uſe, for forming, beating, and rounding their works.

PALLET, in gilding, an inſtrument made of a ſquirrel's tail, to take up the gold leaves from the pillow, and to apply and extend them on the matter to be gilt.

PALLET, in heraldry, is nothing but a ſmall pale, conſiſting of one half of it in breadth; and therefore there are ſometimes ſeveral of them upon one ſhield.

PALLET, a part belonging to the ballance of a watch or movement. See *Watch*.

PALLIATION, or a PALLIATIVE CURE, in medicine, is when, in deſperate and incurable diſeaſes, after predicting the fatal event, the phyſician preſcribes ſome remedies for mitigating the pain, or ſome other urgent ſymptoms, as in ulcerated cancers, or cancerous fiſtulas, and the like.

PALLIUM, or PALL, an archiepiſcopal veſtment of white woollen cloth, about the breadth of a border, made round, and thrown over the ſhoulders.

Upon this border there are two others of the ſame matter and form, one of which falls down upon the breaſt, and the other upon the back, each having a red croſs upon it: ſeveral croſſes of the ſame colour being likewiſe upon the upper part of it, about the ſhoulders.

PALM, *Palma*, in anatomy, the inſide of the hand, called alſo vola.

PALM is alſo a meaſure of length, the ſame as hand-breadth.

PALM-SUNDAY, in the Chriſtian church, the Sunday next before Eaſter; ſo called in memory of our Saviour's triumphal entry into Jeruſalem, when the multitude that attended him ſtrewed palm branches in his way.

PALMARIS MUSCULUS, one of the flexor muſcles of the hand, ſo called as being inſerted into the palm of the hand by a broad expanded tendon: its office ſeems to be the conſtriction of the palm.

* PALMYRA, formerly a very magnificent city of Syria, now part of Turky in Aſia, was the capital of the territories of queen Zenobia. There are very magnificent ruins ſtill remaining; of which there are excellent draughts made on the ſpot. None of the inſcriptions are earlier than the birth of Chriſt, and none later than the deſtruction of the city by Aurelian, except one, which mentions Dioclesian. It was probably firſt looked upon as an advantageous ſpot for carrying on the trade of India, and preſerving an intercourſe between the Mediterranean and the Red Sea; for which reaſon its trade flouriſhed long before the birth of Chriſt, from whence we may ſee the cauſe of its wealth. As it lay between Egypt, Perſia, and Greece, it partook of the manners of each nation; imitating the Egyptians in their funeral rites, the Perſians in their luxury, and the Greeks in their buildings. Among the ruins of Palmyra there are a few huts of the Arabs, and about 30 in the court of the great temple. It is 130 miles S. E. of Aleppo, and about 100 from the river Euphrates. Long. 39. 5. E. Lat. 34. 40. N.

PALPABLE, that which is perceivable by the ſenſes, particularly that of feeling.

PALPEBRÆ, the eye-lids, in anatomy. See *Eye*.

PALPITATION, in medicine, a ſpaſtic contraction of the heart, when it leaps and beats violently.

PALSY, παραλυσις, in medicine, a diſeaſe wherein the body, or ſome of its members, loſe their motion, and ſometimes their ſenſation or feeling. The apoplexy, ſays Dr. Mead, when not mortal, frequently terminates in a palſy, which is the criſis of the diſeaſe: this palſy generally ſeizes but one ſide of the body; and what Morgagni obſerves, after Valſalva, that, on diſſection of the bodies of apoplectics, who had been ſeized with a hemiplegia, he always found the cauſe of the diſeaſe in the oppoſite ſide of the brain, the doctor ſays he has formerly found true more than once in St. Thomas's hoſpital. There is now no longer any room for blood-letting or draſtic purges; it will be ſufficient to give warm and moderate cathartics now and then, ſuch as the tinctura ſacra. And as the diſeaſe is now become chronical, inſtead of bliſters, it will be requiſite to make iſſues in proper places, eſpecially in the nape of the neck, and above the ſcapulæ, either with the actual cautery, or with cauſtic medicines. Hippocrates adviſes to apply the actual cautery in eight places, at leaſt, and ſpecifies them.

The cure is to be chiefly proſecuted with aromatic ſtrengtheners and ſteel; and beſides, it is of ſervice to ſtimulate the ſkin of the paralytic part; which is extremely well effected by the green ointment, mixed with the ſeventh or eighth part of the ſtrong ſpirit of vitriol; and when the part begins to be rubified, the liniment is to be removed, and the part anointed with ointment of elder. Cold bathing is very beneficial in perſons not too far advanced in years, but hot bathing is prejudicial to all paralytics; ſome of whom the doctor has known ſent to Bath by a miſtaken notion of their phyſicians, who, upon coming out of the bath, were ſeized with a return of the apoplexy, which carried them off.

Wherefore the doctor makes the following remarks on theſe waters. Their chief virtue ſeems to conſiſt in a certain mineral heat, whereby they warm and cheriſh the ſtomach and inteſtines; and, therefore, they are chiefly ſerviceable to thoſe who have ruined their appetite and digeſtive faculty by drinking wine or other ſpirituous liquors, which is well known to be the cauſe of a number of evils; but they are very prejudicial to all whoſe inward parts, as the brain, lungs, liver, or kidnies, are too hot. And, for the ſame reaſon, though they may be agreeable to, and mend the ſtomach, yet, if the uſe of them be continued too long, they more frequently hurt this organ: that very warmth which was beneficial at firſt, by immoderate perſeverance, becoming prejudicial, by over-relaxing the fibres. A circumſtance which the doctor ſeveral times obſerved, more particularly in patients whoſe diſeaſes were owing to a fault in the nervous fluid.

This diſeaſe never is acute, is often tedious, and in old people almoſt incurable; and the patient for the moſt part drags a miſerable life. For the vigour of his mind, together with his memory, are loſt, or vaſtly impaired; he totters and ſhakes, and becomes a diſmal ſight, as if no longer a man, but an animal half dead.

PALUMBUS, the ring-dove, a beautiful ſpecies of pigeon, with the neck white on each ſide, and a brown ſpot behind.

* PAN, in pagan worſhip, the ſon of Mercury and Penelope, the wife of Ulyſſes, who was raviſhed by Mercury in the form of a white goat, while ſhe was keeping her father's flocks. He was no ſooner born, than his father carried him to heaven in a goat's ſkin, where he charmed the celeſtial aſſembly with his pipe, after which he was educated on mount Menelaus in Arcadia, by Sinoe, and the other nymphs, whom he attracted by his muſic. He afterwards diſtinguiſhed himſelf in the war with the giants, when he entangled Typhon in his nets. He attended Bacchus in his Indian expedition. He had a conteſt with Cupid, but was conquered by the little deity, who puniſhed him by inſpiring him with a paſſion for the nymph Syrinx, who treated him with diſdain; but he cloſely purſuing her, overtook her by the river Ladon, when invoking the naiades, ſhe was changed into a tuft of reeds, which the diſappointed lover graſped in his arms: but obſerving that as they trembled with the wind they formed a murmuring ſound, he made of them the pipe for which he became ſo famous. He charmed Luna, in the ſhape of a beautiful ram, and had ſeveral other amours. He is repreſented with a ſmiling ruddy face, a thick beard, with the horns, legs, feet, and tail of a goat, with a ſhepherd's crook in one hand, and his pipe of unequal reeds in the other. He is alſo crowned with the leaves of the pine, and cloathed with a ſpotted ſkin. He was properly the god of ſhepherds and hunters, and the flocks and herds were under his immediate protection. Orpheus repreſents this deity as ſignifying univerſal nature. He was particularly honoured in Arcadia. The Romans adopted him amongſt their deities under the names of Lupercus and Lycæus.

PANACEA, among phyſicians, an univerſal medicine, or a remedy for all diſeaſes; a thing impoſſible to be obtained, according to no leſs an author than Boerhaave.

PANADA, a diet conſiſting of bread boild in water to the conſiſtence of a pulp, and ſweetened with a little ſugar. It is given to young children and ſick perſons, whoſe digeſtion is weak, or where ſtronger foods would be improper. It is ſometimes made thin, to ſerve as a drink.

PANAX, ginſeng, in botany. See *Ginſeng*.

PANCREAS, in anatomy, is a long flat gland, of that kind which anatomiſts call conglomerate, ſituated under the ſtomach, between the liver and ſpleen.

PANDECTS, in the civil law, collections made by Juſtinian's order, of five hundred and thirty-four deciſions of the ancient lawyers, on ſo many queſtions occurring in the civil law; to which that emperor gave the force and authority of law, by an epiſtle prefixed to them. The pandects conſiſt of fifty books, and make the firſt part of the body of the civil law.

* PANDORA, in fabulous hiſtory, a woman formed by Prometheus, to whom each of the deities beſtowed ſome perfection. Venus gave her beauty; Pallas, wiſdom; Juno, riches; Apollo, muſic; and Mercury, eloquence: but Jupiter being diſpleaſed at Prometheus for having ſtolen fire from heaven to animate the maſs he had formed, gave Pandora a box, charging her not to open it, and then ſent her to the earth with this box, in which were incloſed age, diſeaſes, peſtilence, war, famine, envy, diſcord, and all the evils and vices that could afflict mankind. This fatal box was opened by Epimetheus, Prometheus's brother, when inſtantly all the diſeaſes and miſchiefs with which it was filled ſpread over the heart, and hope alone remained at the bottom. This ſtory was probably conſidered by the pagans as no more than an allegory, to ſhew the conſequence of diſobedience in things apparently indifferent.

PANEGYRIC, an oration in praiſe of ſome extraordinary thing, perſon, or virtue. Panegyric is ranked among the demonſtrative kinds of orations, of which there are commonly reckoned two kinds, viz. the artificial, where every thing is reduced to certain heads; and the other natural, where the order of hiſtory is obſerved.

PANEL, in law, a ſchedule, or ſmall roll of parchment, in which is contained the names of the jurors returned by the ſheriff, to paſs upon trial; ſo that the impannelling of a jury is no more than the ſheriff's entering them upon his panel or roll.

PANIC, an ill-grounded terror or fright.

PANICUM, panic, in botany, a genus of plants. Panic ſeed is accounted drying, refrigerant, and aſtringent; and therefore recommended in ſpitting of blood, and nocturnal pollutions.

PANNEL, in joinery, a tympanum, or ſquare piece of thin wood, ſometimes carved, framed, or grooved in a larger piece, between two upright pieces and two croſs pieces.

PANNELS *of a Saddle*, two cuſhions or bolſters, filled with cow's or horſe-hair, and placed under the ſaddle, on each ſide, to prevent the bows and bands from galling the horſe.

PANNICULUS CARNOSUS, in comparative anatomy, a robuſt fleſhy tunic, ſituated in beaſts, between the tunic and the fat; by means of which they can move their ſkin in whole or part: it is altogether wanting in mankind.

PANTHEON, in Roman antiquity, a temple of a circular form, dedicated to all the gods: it was built by Agrippa, ſon-in-law to Auguſtus; but is now converted into a church, and dedicated to the Virgin and all the martyrs.

PANTOMIME, one who imitates all ſorts of actions and characters, by mere geſtures, without ſpeaking a word.

PAPAVER, the poppy, in botany. See POPPY.

PAPER, ϖαπυρος, ſheets of a thin matter, made of ſome vegetable ſubſtance. The materials on which mankind have, in different ages, contrived to write their ſentiments, have been extremely various; in the early ages they made uſe of ſtones, and tables of wood, wax, ivory, &c. See *Book*. Egyptian paper was made of the ruſh papyrus; bark paper, of the inner rind of ſeveral trees; cotton paper, of cotton; incombuſtible paper; and European paper, of linen rags.—Egyptian paper was principally uſed among the ancients, being made of the papyrus, or biblus, a ſpecies of ruſh which grew on the banks of the Nile. In making it into paper, they began with lopping off the two extremes of the plant, the head and the root; the remaining part, which was the ſtem, they cut lengthwiſe into two nearly equal parts, and from each of theſe they ſtripped the ſcaly pellicles of theſe which it conſiſted. The innermoſt of theſe pellicles were looked on as the beſt, and that neareſt the rind as the worſt: they were therefore kept apart, and made to conſtitute two different ſorts of paper. As the pellicles were taken off, they extended them on a table, laying them over each other tranſverſely, ſo as that the fibres made right angles; in this ſtate they were glued together by the muddy waters of the Nile; or, when thoſe were not to be had, with paſte made of the fineſt wheat-flour, mixed with hot water and a ſprinkling of vinegar. The pellicles were next preſſed, to get out the water, then dried, and laſtly flatted and ſmoothed by beating them with a mallet: this was the Egyptian paper, which was ſometimes farther poliſhed by rubbing it with a glaſs-ball, or the like. Bark-paper was only the inner whitiſh rind between the bark and the wood of ſeveral trees, as the maple, plane, beech, and elm, but eſpecially the tilia or linden-tree, which was that moſtly uſed for this purpoſe. On this, ſtripped off, flatted, and dried, the ancients wrote books, ſeveral of which are ſaid to be ſtill extant.——Chineſe paper is of various kinds; ſome is made of the rinds or barks of trees, eſpecially the mulberry-tree and elm, but chiefly of the bamboo and cotton-tree. In fact, almoſt each province has its ſeveral paper. The preparations of paper made of the barks of trees may be inſtanced in that of the bamboo, which is a tree of the cane or reed kind. The ſecond ſkin of the bark, which is ſoft and white, is ordinarily made uſe of for paper: this is beat in fair water to a pulp, which they take up in large moulds, ſo that ſome ſheets are above twelve feet in length: they are completed, by dipping them, ſheet by ſheet, in alum-water, which ſerves inſtead of the ſize among us, and not only hinders the paper from imbibing the ink, but makes it look as if varniſhed over. This paper is white, ſoft, and cloſe, without the leaſt roughneſs; though it cracks more eaſily than European paper, is very ſubject to be eaten by the worms, and its thinneſs makes it liable to be ſoon worn out. Cotton-paper is a ſort of paper which has been in uſe upwards of ſix hundred years. In the French king's library are manuſcripts on this paper, which appear to be of the tenth century; and from the twelfth century, cotton manuſcripts are more frequent than parchment ones. Cotton-paper is ſtill made in the Eaſt Indies, by beating cotton rags to a pulp.

Linen, or European paper, appears to have been firſt introduced among us towards the beginning of the fourteenth century; but by whom this valuable commodity was invented, is not known.

Paper is of various kinds, and uſed for various purpoſes: with regard to colour, it is principally diſtinguiſhed into white, blue, and brown; and, with regard to its dimenſions, into atlas, elephant, imperial, ſuper-royal, royal, medium, demy, crown, fool's-cap, and pot-paper.

Blotting PAPER, is paper not ſized, and into which ink readily ſinks: it is uſed in books, &c. inſtead of ſand, to prevent blotting, and by chymiſts, &c. for filtrating.

Bliſtered PAPER, white paper waſhed over with a ſponge dipped in ſoot water. It is uſed by the painters in crayons to ſave labour in places which are to be ſhadowed the ſame depth of the teint of that paper. The lights are laid in with white.

Marbled PAPER. See *Marbling*.

PAPER *Hangings*, furniture now greatly uſed. The paper manufactured for hangings is of ſeveral kinds, ſome being made in repreſentation of ſtucco-work, for the covering cielings, or the ſides of halls, ſtair-caſes, paſſages, &c. and others in imitation of velvet, damaſk, brocades, chints, or other ſuch ſilks and ſtuffs as are employed for hanging rooms. The principal difference in the manufacture lies, however, in the grounds; ſome of which are laid in varniſh, and others in the common vehicles for water-colours; and in the raiſing a kind of coloured emboſſment by chopt cloth. This emboſſed ſort is called flock-paper; the art of making which is of very late invention, and is a great improvement of the manufacture of paper hangings, both with regard to the beauty and durableneſs.

Unwrought PAPER *proper for Hangings.* The kind of paper employed for making the paper hangings is a ſort of coarſe cartoon manufactured for this purpoſe; and there being a particular duty on paper-hangings, it is required under conſiderable penalties to be ſtamped before it be painted, or otherwiſe decorated for this purpoſe. There is no occaſion, however, to be more particular in explaining the qualities of this kind of unwrought paper; becauſe it is to be had of all the wholeſale ſtationers manufactured in a proper manner.

Colours proper to be uſed for PAPER *Hangings.*—The colours proper to be uſed for the painting or colouring the paper hangings, are all the kinds that can be uſed in water and varniſh.

Manner of painting the PAPER *Hangings.*—There are three methods by which paper hangings are painted: the firſt by printing on the colours; the ſecond by uſing the ſtencil; and the third by laying them on with a pencil, as in other kinds of painting.

PAPIER *Maché*, paper reduced to the conſiſtence of a pulp by boiling and beating. When this pulp is of a proper conſiſtence, it is caſt in a moiſt ſtate in proper moulds; and having been previouſly mixed with ſome gummous, or other adheſive body, will acquire ſo conſiderable a degree of tenacity and hardneſs, as to retain the figure; and anſwer the end of wood turned, or carved, or plaſter caſt into the ſame form.

The paper uſed for making the papier maché may be of any kind, according to the nicety required in the work to which it is applied. For very coarſe purpoſes, brown may be employed; and for the moſt nice, writing-paper is beſt: and it is not very material whether the paper be clean or foul, or whether it be written or printed upon, or blank: except where it is intended to be only moulded, and not coloured, or varniſhed afterwards; which is ſeldom the caſe.

The gum or adheſive body uſed for giving the due texture to the papier maché may be gum-arabic, glue, or iſinglaſs; but for common purpoſes, gum-arabic, or glue are uſed, iſinglas being too dear; and indeed gum-arabic has an advantage over either of the other, of not ſhrinking near ſo much in drying.

The preparation of the papier maché may be as follows. "Take any quantity of paper, and boil it in water, ſtirring it about with a wooden ſpatula, till it becomes of a paſty ſubſtance, and appear to have loſt its coheſion. Pour off then the water from it, and beat it in a mortar, or ſuch kind of machine as will have the ſame effect, till it be perfectly ſoft and yielding pulp. Prepare, in the mean time, a ſtrong gum water, by diſſolving gum-arabic in water; and having preſſed the greateſt part of the water out of the pulp, add the gum water to it in ſuch proportion, that they may produce together the conſiſtence of a thick fluid. Put them then into a proper veſſel, and boil them ſlowly, till they form a paſte of the right conſiſtence for caſting. The papier maché will then be ready prepared for working with the proper moulds; but the ſtiffneſs of the paſte may be varied with advantage, according to the nature of the work. That intended for pieces where the figure is ſimple, and has no ſharp or emboſſed work, requiring to be ſtiffer; while the emboſſed work, or other ſuch as has relieved parts, ſhould be thinner. The uſing glue or ſize, inſtead of gum-arabic, makes a ſaving and will anſwer extremely well in the caſe of boxes, or any other pieces of a ſimple or flat form, becauſe the ſhrinking may be allowed for in the figure of the moulds; but for emboſſed work, or deſigns where ſeveral parts muſt be joined together, the uſe of gum arabic will be found more expedient, as the relative proportions will be much better preſerved.

The moulds in which the papier maché is caſt may be either of plaſter of Paris or wood. For emboſſed work, or deſigns of a more complex kind, plaſter is preferable: but for boxes, cups, or ſimpler forms, the moulds may be beſt of wood, as ſuch will laſt for a long time, and not require renewing ſo often, from the unavoidable wear, or the injury of a ſlight accidental violence, as thoſe made of plaſter. But in the choice of moulds, and ſubjects to which they are applied, regard ſhould be had to the figure, with reſpect to its roundneſs, or projecting parts; for emboſſed work or frames of any kind, where there are a variety of angles on one ſide, and a flat plainneſs on the other, are moſt expediently managed in plaſter: and where there are nice joints, as in the caſe of boxes, or where the figure muſt be preſerved on both ſides, wood is much more proper. The plaſter moulds for caſting the papier maché muſt be made in the ſame manner as thoſe for caſting in plaſter. See *Caſting*

But it is peculiarly neceſſary in caſting the papier maché to greaſe the moulds extremely well; otherwiſe there will be a coheſion betwixt the matter caſt and the moulds, that will be deſtructive to both Where any ſubject caſt is of conſiderable extenſion, and one ſide of it a blank reverſe, as in the caſe of bas-reliefs, and other ornaments of that nature, it is uſual to lay ſlips of whole ſtrong paper over the papier maché; ſuch paper being firſt well moiſtened with gum-water, or ſtrong ſize, which is rather better in this caſe. This not only makes a ſaving, but is really an advantage to the work, as it adds greatly to the ſtrength and tenacity, and more eſpecially preſerves it, during the time of its drying, from the injuries of ſlighter violence: to anſwer this end more effectually, the paper itſelf applied to this purpoſe ſhould, however, be very ſtrong, and where the nature of the ſubject admits of it, laid on ſeveral times doubled.

The wooden moulds, which are the moſt proper ſort for forming boxes, cups, or flat pieces of any kind, where there is no emboſſed work, muſt be made in two parts; or, more explicitly, there muſt be a convex part and a concave part; betwixt which a ſpace muſt be allowed for the figure of the ſubject that is to be caſt. Theſe may be beſt made of box, or other hard wood turned into the proper figure: and it is expedient to have two or three ſmall perforations, or holes, through the ſubſtance of the wood of the concave part near the middle, to let out the fluid when the papier maché is compreſſed, to give it the due form. The hollow betwixt the convex and concave parts of the mould may be about a ſeventh or eighth part of an inch thick, in the caſe of ſnuff or dreſſing-boxes, or other pieces of the like magnitude; but it may be enlarged when bigger ſubjects come in queſtion. The moulds, when firſt uſed, ſhould be well greaſed, and placed before a fire, that they may imbibe as much as poſſible of the greaſe; which will render the oiling them afterwards, each time they are employed, more effectual.

When the moulds are prepared, the ſurface of the concave or hollow part muſt be ſpread all over with the paſte, as evenly as poſſible, and as nearly as can be judged, of the thickneſs of the hollow betwixt the two parts; and then the cover or ſolid part of the mould muſt be put over the paſte, and compreſſed till it be in its proper place. The caſt being thus made, it muſt be ſuffered to remain in the mould till it gain a ſufficient ſtrength and tenacity of parts, by drying, to be able to maintain its form when taken out; and then, being freed from both parts of the mould, it muſt be dried, and afterwards varniſhed or painted, according to the purpoſe for which it is deſigned.

PAPILIO, the butterfly, in zoology, a numerous genus of four-winged inſects, diſtinguiſhed by clavated antennæ. The number of butterflies is ſo great, that authors commonly divide them into claſſes, or ſubdiviſions, according to the number of their legs, ſome having ſix, and others only four legs, under each of which are comprehended a multitude of beautiful ſpecies, diſtinguiſhed by the different colours and variegations of their wings.

PAPILIONACEOUS, among botaniſts, an appellation given to the flowers of certain plants, from their reſembling the figure of a butterfly.

PAPILLA, in anatomy, a name given to the nipple of the breaſt, and alſo to the ſmall eminences of the ſkin and tongue.

PAR, in commerce, any two things equal in value; and in money affairs, it is ſo much as a perſon muſt give of one kind of ſpecie, to render it juſt equivalent to a certain quantity of another.

PARABLE, a fable, or allegorical inſtruction, founded on ſomething real or apparent, in the nature of hiſtory, from which a moral is drawn, by comparing it with ſomething in which the hearers are more immediately concerned.

PARABOLA, in geometry, a figure ariſing from the ſection of a cone, when cut by a plane parallel to one of its ſides. See *Conic Section.*

From the ſame point of a cone, therefore, only one parabola can be drawn: all the other ſections within theſe parallels being ellipſis; and all without hyperbolas.

To deſcribe a parabola by a continual motion. — Let the ſtraight rule G R (plate XL. fig. 7.) be fixed on a plane, then take another rule as R D C right-angled at D, and let its ſide D C ſlide along GK; take a ſtring equal in length to the ſide RD, and fix one end of it in any point of the plane as in F, and the other end at R the extremity of the rule; then while DC ſlides along GK, keep by a pin P the ſtring RPF conſtantly as cloſe DR as may be, ſo that it may be always ſtraight, the pin at P will by this motion deſcribe the curve P A Q of a parabola.

The line GK is called the directrix, or director, and the point F the focus of the parabola.

From this deſcription it may eaſily be ſeen that the diſtance of any point of the parabola from the focus, is equal to the perpendicular let fall from that point on the directrix; that is, $FP = PD$: conſequently when D comes to B, then P muſt fall in A, whence $AF = AB$.

Properties of the PARABOLA.—The ſquare of any ordinate is equal to the rectangle of the abſciſſa, and four times the diſtance of the focus from the vertex, that is $PM^2 = AM \times 4AF$. For $PF^2 = PM^2 + FM^2$, but $PF = PD = BM$; then $BM^2 = PM^2 + MF^2 = FF + 4AM \times AF$ (Eu. 8. 2.); therefore $PM^2 = AM \times 4AF$.

When the point m falls between the vertex A and focus F, then $\overline{Bm}^2 = (\overline{Fp}^2 =) \overline{Fm}^2 + \overline{mp}^2$; alſo $\overline{Bm}^2 = 4AF \times Am + \overline{Fm}^2$; whence $4AF \times Am = \overline{mp}^2$.

Let $AF = a$, AM or $Am = x$, PM or $pm = y$; then $4ax = yy$, the equation of the parabola, wherein $4a$ is called the *latus rectum*, or right parameter of the parabola.

To draw a tangent to any point of the parabola, as P. Take $AT = AM$, or $FT = FP$, draw TP, it will be the tangent required.

The perpendicular on the tangent, from the focus, is a mean proportional between the diſtance from the vertex to the focus, and the diſtance of the focus from the point of contact; or $AF : EF :: EF : EP$. For the angles A F E and EPF are equal; and the angles E A F, FMP, P E F, are each right; therefore the triangles EAF, EPF, are ſimilar; whence $AF : EF :: EF : FP$.

All lines within the parabola which are drawn parallel to the axis, are called diameters. Thus P I (fig 8.) parallel to the axis AM is a diameter; and ordinates to thoſe diameters are right lines, drawn parallel to the tangents at the vertices of thoſe diameters. Thus O I is an ordinate to the diameter P I.

The parameter of any diameter is a right line, ſuch that the product under the ſame, and the abſciſſa, is equal to the ſquare of the ſemi-ordinate.

Diverging PARABOLA, a name given by Sir Iſaac Newton to five different lines of the third order, expreſſed by the equation $yy = ax^3 + bx^2 + cx + d$.

PARABOLIC *Conoid*, a ſolid figure generated by the rotation of a parabola about its axis. Its ſolidity is half that of its circumſcribing cylinder, being made up of a ſeries of circles in arithmetical proportion, whoſe number of terms is expreſſed by the axis of the conoid, firſt term 0, and laſt term the area of the baſe. A parabolic conoid is to a cylinder of the ſame baſe and height, as 1 to 2, and to a cone of the ſame baſe and height as $1\frac{1}{2}$ to 1, or as 3 to 2.

PARABOLIC *Pyramidoid*, a ſolid figure generated by ſuppoſing all the ſquares of the ordinates applicates in the parabola ſo placed, as the axis ſhall paſs through all the centers in right angles; in which caſe the aggregate of the planes will form the parabolic pyramidoid.

The ſolidity hereof is had by multiplying the baſe by half the altitude; the reaſon of which is obvious; for the component planes being a ſeries of arithmetical proportionals beginning from 0, their ſum will be equal to the extremes multiplied by half the number of terms.

PARABOLIC *Space*, the area contained between any entire ordinate and the curve of the incumbent parabola.

Segment of a PARABOLIC *Space*, that ſpace included between two ordinates.

PARABOLIC *Spindle*, a ſolid formed by the revolution of a parabola about an ordinate rightly applied. This ſolid is eight fifteenths of its circumſcribing cylinder.

PARABOLOIDES, in geometry, parabolas of the higher kind; the general equation of theſe curves is $p^{m-1} \times z^{m-1} = y^{m}$, wherein m may be expounded by any number (greater than 1) at pleaſure.

PARACENTESIS, in ſurgery, an operation commonly called tapping. See *Hydrocele*.

PARADE, the placing any thing to public view, with all its advantages and ornaments.

PARADE, in war, a place where the troops meet to go upon guard, or any other ſervice.

PARADE, in fencing, the action of parrying, or turning off any thruſt.

PARADISE, a term principally uſed for the garden of Eden, in which Adam and Eve were placed immediately upon their creation. As to this terreſtrial paradiſe, there have been many enquiries about its ſituation. It has been placed in the third heaven, in the orb of the moon, in the moon itſelf, in the middle region of the air, above the earth, under the earth, in the place poſſeſſed by the Caſpian ſea, and under the arctic pole. The learned Huetius places it upon the river produced by the conjunction of the Tigris and Euphrates, now called the river of the Arabs, between this conjunction and the diviſion made by the ſame river before it falls into the Perſian ſea. Other geographers have placed it in Armenia, between the ſources of the Tygris, the Euphrates, the Araxis, and the Phaſis, which they ſuppoſe to be the four rivers deſcribed by Moſes. The celeſtial paradiſe is that place of pure and refined delight in which the ſouls of the bleſſed enjoy everlaſting happineſs. In this ſenſe it is frequently uſed in the New Teſtament: our Saviour tells the penitent thief on the croſs, "This day ſhalt thou be with me in paradiſe." And St. Paul ſpeaking of himſelf in the third perſon, ſays, 'I knew a man who was caught up into paradiſe, and heard unſpeakable words, which is not lawful for a man to utter."

Mahomet has promiſed his followers a paradiſe of mere ſenſual delights.

Bird of PARADISE, *Paradiſæa*, in ornithology, a genus of birds of the order of picæ.

Of this genus there are a great many elegant ſpecies.

PARADOX, in philoſophy, a propoſition ſeemingly abſurd, as being contrary to ſome received opinion, but yet true in fact.

No ſcience abounds more with paradoxes than geometry: that the right line ſhould continually approach to the hyperbola, and yet never reach it, is a true paradox; and in the ſame manner, a ſpiral may continually approach to a point, and yet not reach it, in any number of revolutions, however great.

PARAGOGE, in grammar, a figure whereby a letter is added to the end of a word.

PARAGRAPH, a ſection or diviſion of a chapter, and in references is marked thus ¶.

PARALEPSIS, in rhetoric, the pretence of paſſing over ſomething, and yet mentioning it by the bye.

PARALIPOMENA, a ſupplement of things omitted in a preceding work.

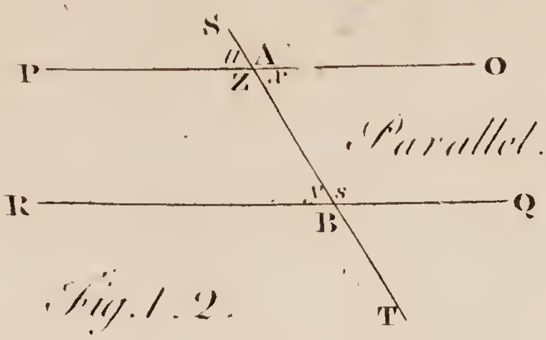
PARALLACTIC, ſomething relating to the parallax of the heavenly bodies.

PARALLAX, *Parallaxis*, in aſtronomy, a change of the apparent place of any heavenly object in the ſphere of heaven, cauſed by its being ſeen from different points of view.

Annual PARALLAX of a phænomenon, the change of its apparent place in the ſphere of the heaven, which is cauſed by its being viewed from the earth in different parts of her orbit: the annual parallax of all the planets is conſiderable, but that of the fixed ſtars is inſenſible. See *Aberration*

PARALLAX, in levelling, denotes

the



Parallel.

Fig. 1. 2.

Fig. 3.

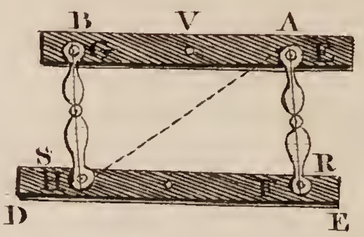


Fig. 4. Parallelogram.

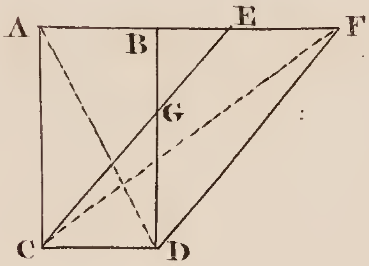
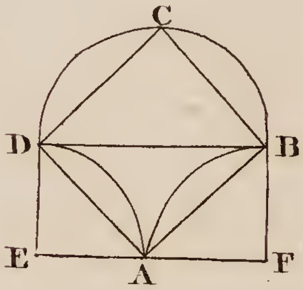


Fig. 5. Pelecoides.



Perpetual Motion.

Fig. 8.

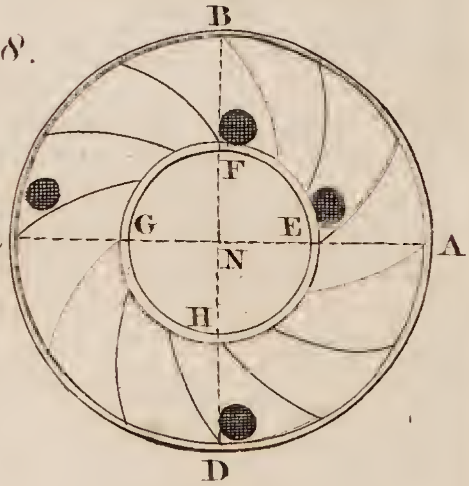


Fig. 6. Pendulum.

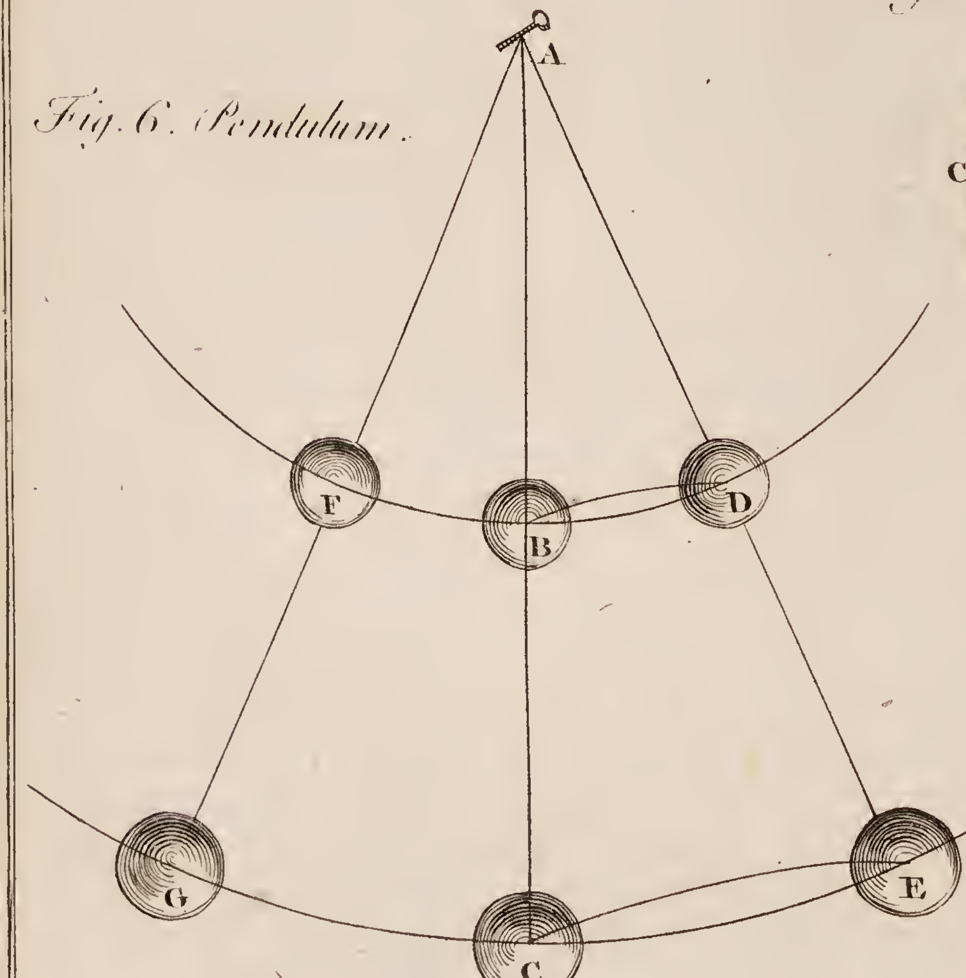
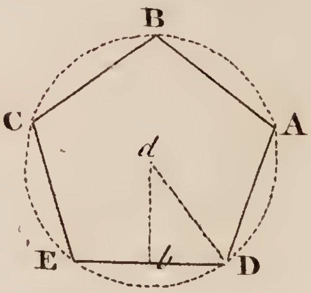


Fig. 7. Pentagon.



the angle contained between the line of true level and that of apparent level.

PARALLEL, in geometry, is applied to lines, figures, and bodies, every where equidiſtant from each other, and which, though infinitely produced, would never meet; thus, the line O P (plate XLI. fig. 1.) is parallel to Q R.

Parallel lines ſtand oppoſed to lines converging and diverging. Geometricians demonſtrate, that if two parallels O P and Q R (fig. 2.) be cut by a tranſverſe line S T in A and B; 1. The alternate angles x and y are equal. 2. The external angle u is equal to the internal oppoſite one y: and, 3. the two internal oppoſite ones x and y are alſo equal to two right angles.

It is ſhewn on the principles of optics, that if the eye be placed between two parallel lines, they will appear to converge towards a point oppoſite to the eye. And if they run to ſuch a length, as that the diſtance between them be but as a point thereto, they will there appear to coincide.

Parallel lines are deſcribed by letting fall equal perpendiculars, and drawing lines through the extremes.

PARALLEL *Planes*, ſuch planes as have all the perpendiculars drawn betwixt them equal to each other.

PARALLEL *Rays*, in optics, thoſe which keep at an equal diſtance from the viſible object to the eye, which is ſuppoſed to be infinitely remote from the object.

PARALLEL *Ruler*, or *Parallelifm*, an inſtrument conſiſting of two wooden, braſs, &c. rulers, A B, C D, (fig. 3.) equally broad every where, and ſo joined together by the croſs blades EF and GH, as to open at different intervals, accede and recede, and yet ſtill retain their paralleliſm.

The uſe of this inſtrument is obvious; for one of the rulers being applied to RS, and the other withdrawn to a given point V, a right angle A B, drawn by its edge, through V, is a parallel to R S.

PARALLELS, or PARALLEL *Circles*, in geography, called alſo parallels or circles of latitude, are leſſer circles of the ſphere conceived to be drawn from weſt to eaſt through all the points of the meridian, commencing from the equator to which they are parallel, and terminating with the poles. They are called parallels of latitude, becauſe all places lying under the ſame parallel, have the ſame latitude.

PARALLELS *of Latitude*, in aſtronomy, leſſer circles of the ſphere parallel to the ecliptic, imagined to paſs through every degree and minute of the colours. They are repreſented on the globe by the diviſions on the quadrant of altitude, in its motion round the globe, when ſcrewed over the pole of the ecliptic. See *Globe*.

PARALLELS *of Altitude*, or *Almacantars*, circles parallel to the horizon, imagined to paſs through every degree and minute of the meridian between the horizon and zenith, having their poles in the zenith. They are repreſented on the globe by the diviſions on the quadrant of altitude, in its motion about the body of the globe, when ſcrewed to the zenith.

PARALLELS *of Declination*, in aſtronomy, the ſame with parallels of latitude in geography.

PARALLEL *Sphere*, that ſituation of the ſphere wherein the equator coincides with the horizon, and the poles with the zenith and nadir; conſequently the poles of the world become the poles of the horizon. In this ſphere all the parallels of the equator become parallels of the horizon, conſequently no ſtars ever riſe or ſet, but all turn round in circles parallel to the horizon; and the ſun, when in the equinoctial, wheels round the horizon the whole day. After his riſing to the elevated pole, he never ſets for ſix months; and after his entering again on the other ſide of the line, never riſes for ſix months longer. This is the poſition of the ſphere to ſuch as live under the poles, and to whom the ſun is never above 23° 30′ high.

PARALLEL *Sailing*, in navigation, the ſailing under a parallel of latitude.

PARALLELEPIPED, or PARALLELOPIPED, in geometry, a regular ſolid, comprehended under ſix parallelograms, the oppoſite ones whereof are ſimilar, parallel, and equal. All parallelepipeds, priſms, cylinders, &c. whoſe baſes and heights are equal, are themſelves equal. A diagodal plane divides a parallelepiped into two equal priſms; ſo that a triangular priſm is half a parallelepiped upon the ſame baſe, and of the ſame altitude. All parallelepipeds, priſms, cylinders, &c. are in a ratio compounded of their baſes and altitudes; wherefore, if their baſes be equal, they are in proportion to their altitudes; and converſely. All ſimilar parallelepipeds, cylinders, cones, &c. are in a triplicate ratio of their homologous ſides, and alſo of their altitudes. Equal parallelepipeds, priſms, cones, cylinders, &c. reciprocate their baſes and altitudes

PARALLELISM, the ſituation or

quality whereby any thing is denominated parallel.

PARALLELISM *of the Earth's Axis*, in aſtronomy, that ſituation of the earth's axis, in its progreſs through its orbit, whereby it is ſtill directed towards the pole-ſtar; ſo that if a line be drawn parallel to its axis, while in any one poſition, the axis, in all other poſitions, will be always parallel to the ſame line. This paralleliſm is the neceſſary reſult of the earth's double motion, namely round the ſun, and its own axis. And to it we owe the viciſſitudes of ſeaſons, and the inequality of day and night.

PARALLELISM *of the Rows of Trees* —Theſe are never ſeen parallel, but always inclining to each other towards the farther extreme.

Hence mathematicians have taken occaſion to enquire in what lines the trees muſt be diſpoſed to correct this effect of the perſpective, and make the rows ſtill appear parallel. The two rows muſt be ſuch, as that the unequal intervals of any two oppoſite or correſpondent trees may be ſeen under equal viſual rays.

On this principle ſome have ſhewn, that the two rows of trees muſt be two oppoſite ſemi-hyperbolas.

M. Varignon, in Mem de l'Acad. ann. 1717, renders the problem much more general, and requires not only that the viſual angles be equal, but to have them increaſe or decreaſe in any given ratio, provided the greateſt do not exceed a right angle. The eye requires to be placed in any point, either juſt at the beginning of the ranges, beyond, or on this ſide.

He ſuppoſes the firſt row to be a right line, and ſeeks what line the other muſt be, which he calls the curve of the range: this he finds muſt be an hyperbola to have the viſual angles equal. The ſtreight and hyperbolical rows will be ſeen parallel to infinity; and, if the oppoſite ſemi-hyperbola be added, we ſhall have three rows of trees, the ſtraight one in the middle, and all three parallel.

It is ſufficient that this ſecond hyperbola have the ſame center, its vertex in the ſame right line, and the ſame conjugate axis. Thus the two hyperbolas may be of all the different kinds poſſible, yet all have the ſame effect.

If it be required to have the trees appear under decreaſing angles, the ſtraight row being laid down as before, he ſhews, that if the decreaſe be in a certain ratio, the other line muſt be a parallel ſtraight line. But he goes yet farther, and ſuppoſing the firſt row any curve whatever, he ſeeks for another that ſhall make the rows have any effect deſired.

PARALLELOGRAM, in geometry a quadrilateral right-lined figure, whoſe oppoſite ſides are parallel and equal to each other. It is generated by the equable motion of a right line always parallel to itſelf. When it has all its four angles right, and only its oppoſite ſides equal, it is called a rectangle or oblong. When the angles are all right, and the ſides equal, it is called a ſquare. If all the ſides be equal, and the angles unequal, it is called a rhombus or lozenge: and if the ſides and angles be unequal, it is called a rhomboides.

Properties of the PARALLEOGRAM.— In every parallelogram of what kind ſoever, as A B C D (plate xli fig. 1.) a diagonal D A divides it into two equal parts; and the angles diagonally oppoſite B, C, and A D, are equal; the oppoſite angles of the ſame ſide C. D, and A, B, &c. are together equal to two right angles; and each two ſides, together, greater than the diagonal.

Two parallelograms A B C D, and E C D F, on the ſame or equal baſe C D, and of the ſame height A C, or between the ſame parallels A F, C D, are equal: and hence two triangles C D A, and C D E, on the ſame baſe and of the ſame height, are alſo equal. Hence, alſo, every triangle G F D is half a parallelogram, ACDB upon the ſame or an equal baſe C D, and of the ſame altitude, or between the ſame parallels. Hence, alſo, a triangle is equal to a parallelogram, having the ſame baſe and half the altitude, or half the baſe and the ſame altitude.

Parallelograms, therefore, are in a given ratio compounded of their baſes and altitudes. If then the altitudes be equal, they are as the baſes, and converſely. In ſimilar parallelograms and triangles, the altitudes are proportional to the homologous ſides, and the baſes are cut proportionably thereby. Hence ſimilar parallelograms and triangles are in a duplicate ratio of their homologous ſides; as alſo of their altitudes, and the ſegments of their baſes; they are, therefore, as the ſquares of the ſides, altitudes, and homologous ſegments of the baſes.

In every parallelogram, the ſum of the ſquares of the two diagonals is equal to the ſum of the ſquares of the four ſides. For if the parallelogram be rectangular, it follows, that the two diagonals are equal: and conſequently the ſquare of

a

a diagonal, or which comes to the ſame thing, the ſquare of the hypothenuſe of a right angle, is equal to the ſquares of the ſides.

If the parallelogram be not rectangular, and of conſequence the two diagonals unequal, which is the moſt general caſe, the propoſition becomes of vaſt extent; for inſtance, in the whole theory of compound motions, &c. There are ſeveral ways of demonſtrating this problem: the analytical method is ſhewn by Sir Iſaac Newton, in his Univerſal Arithmetic.

To find the area of a rectangled parallelogram, multiply the length ſuppoſed =354 in the breadth=132, the product will be the area of the parallelogram; namely, 46728. Hence, 1. Rectangles are in a ratio compounded of their ſides. 2. If, therefore, three right lines be continually proportional, the ſquare of the middle one is equal to the rectangle of the two extremes; and if four right lines be proportional, the rectangle under the two extremes is equal to that under the two middle terms.

Other parallelograms, not rectangular, have their areas found by reſolving them, by diagonals, into two triangles, and adding the areas of the ſeparate triangles into one ſum.

PARALOGISM, in logic, a falſe reaſoning, as when a conſequence is drawn from principles that are falſe; or, though true, are not proved; or when a propoſition is paſſed over that ſhould have been proved by the way. A paralogiſm differs from a ſophiſm in this, that the ſophiſm is committed out of deſign and ſubtlety, and the paralogiſm out of miſtake and for want of ſufficient light and application.

PARALYSIS, the palſy. See *Palſy*.

PARALYTIC, a perſon afflicted with the palſy.

PARAMETER, in conic ſections, a conſtant line; otherwiſe called latus rectum when applied to the principal axis of the figure.

PARAMOUNT, in law, the ſupreme lord of the fee. The lords of theſe honours or manors that have manors under them are ſtiled lords paramount; and the king, by our law, is the chief lord of all the lands in England. See *Manor*.

PARAPET, in fortification, an elevation of earth deſigned for covering the ſoldiers from the enemies cannon or ſmall ſhot. The thickneſs of the parapet is from eighteen to twenty feet; its height is ſix feet on the inſide, and four or five on the outſide. It is raiſed on the rampart, and has a ſlope above called the ſuperior talus, and ſometimes the glacis of the parapet. The exterior talus of the parapet is the ſlope facing the country: there is a banquette or two for the ſoldiers, who defend the parapet to mount upon, that they may the better diſcover the country, foſſe, and counterſcarpe, and fire as they find occaſion.

Parapet of the covert way, or corridor, is what covers that way from the ſight of the enemy, which renders it the moſt dangerous place for the beſiegers becauſe of the neighbourhood of the faces, flanks, and curtins of the place.

PARAPET is alſo a little wall raiſed breaſt high on the banks of bridges, keys, or high buildings, to ſerve as a ſtay, and prevent people's falling over.

PARAPHERNALIA, or PARAPHERNA, in the civil law, thoſe goods which a wife brings her huſband beſides her dower, and which are ſtill to remain at her diſpoſal excluſive of her huſband, unleſs there is ſome proviſion made to the contrary in the marriage contract.

PARAPHIMOSIS, in medicine, a diſorder of the penis, wherein the prepuce is ſhrunk, and withdrawn behind the glans, ſo as not to be capable of being brought to cover the ſame, which frequently happens in venereal diſorders.

The cure of a paraphimoſis, according to Heiſter, conſiſts chiefly in returning the contracted prepuce over the naked glans; but as a violent inflammation is uſually the chief cauſe of its being ſo difficult to return the prepuce in the paraphimoſis, it may be firſt proper to make uſe of diſcutient and emollient fomentations or cataplaſms, with camphorated ſpirit of wine before the prepuce is attempted to be drawn over the glans, which being affected, all the other bad ſymptoms will vaniſh of courſe. However, ſome ſurgeons prefer the uſe of cold water, becauſe the former remedies often augment the influx of the blood to the parts, and ſo increaſe the tumor. But when the penis, ſcrotum, and lower part of the abdomen, are immerged in cold water, with plentiful bleeding, the tumor generally ſubſides in a ſhort time: the penis is then to be held between the ſurgeon's two foremoſt fingers of each hand; and the glans having been firſt lubricated with oil or butter, is to be forcibly preſſed back with his thumbs, whilſt the prepuce is at the ſame time drawn forward under his fingers, ſo as to cover the denudated glands; but when the inflammation is not very large, it may be often ſufficient only to bathe the parts in water, when there is little or no virulency. On the contrary, when the tumefied penis tends to mortify through the violence of the inflammation, or long continuance of the diſorder, it will be moſt adviſeable to bleed the patient firſt in the arm, and then in the vena dorſalis penis, in which laſt it ſhould be continued till the tumor ſubſides, and then the prepuce may be drawn over the glands as before.

PARAPHRASE, ϖαραφρασις, an explanation of ſome text, in clearer and more ample terms, whereby is ſupplied what the author might have ſaid or thought on the ſubject.

PARAPHRENITIS, in medicine, an inflammation of the diaphragm.

PARAPLEGIA, or Paraplexia, in medicine, a ſpecies of paralyſis, or palſy, uſually ſucceeding an apoplexy.

PARASANG, an ancient Perſian meaſure, different at different times, and in different places; being ſometimes thirty, ſometimes forty, and ſometimes fifty ſtadia, or furlongs.

PARASALENE, in phyſiology, a mock moon, a meteor, or phænomenon, encompaſſing, or adjacent to, the moon, in form of a luminous ring; wherein are ſometimes obſerved one, ſometimes two, apparent images of the moon.

The paraſelones are formed after the ſame manner as the parhelia, or mock ſuns. See *Parhelium*.

PARASITES, or Parasitical Plants, in botany, ſuch plants as are produced out of the trunk or branches of other plants, from whence they receive their nouriſhment, and will not grow upon the ground, as the miſſeto, &c.

PARASYNANCHE, in medicine, a kind of angina or quinzy, wherein the exterior muſcles of the throat are inflamed. See *Quinzy*.

PARATHENAR, in anatomy, the name of two muſcles of the foot.

PARATHESIS in grammar, the ſame with appoſition.

Parathesis is alſo the ſame with parentheſis. See *Parentheſis*.

PARCÆ, in the heathen mythology, goddeſſes ſuppoſed to preſide over the accidents and events, and to determine the date or period of human life. The ancients reckoned the parcæ, who were alſo called fates and deſtinies, to be three in number, becauſe all things have their beginning, progreſs, and end. They were called Atropos, Clotho, and Lacheſis, and are repreſented as ſpinning the thread of human life, in which employment Clotho held the diſtaff, Lacheſis turned the wheel, and Atropos cut the thread. Their perſons are variouſly deſcribed: ſometimes they are repreſented as old women, one holding a diſtaff, another a wheel, and a third a pair of ſciſſars. Others paint Clotho in a robe of divers colours, with a crown of ſtars upon her head, and holding a diſtaff in her hand; Lacheſis in a garment covered with ſtars, and holding ſeveral ſpindles; and Atropos they clad in black, cutting the thread with a large pair of ſciſſars.

PARCHMENT, in commerce, the ſkins of ſheep or goats prepared in ſuch a manner as to render it proper for writing upon, covering books, &c. The manufacture of parchment is begun by the ſkinner, and finiſhed by the parchment-maker.

What is called vellum, is only parchment made of the ſkins of abortives, or at leaſt ſucking calves. This has a much finer grain, and is whiter and ſmoother than parchment; but is prepared in the ſame manner, except its not being paſſed through the lime-pit.

PARDON, in law, is the forgiveneſs of an offence againſt the king or the laws.

PAREGORICS, in pharmacy, medicines that aſſuage pain, otherwiſe called anodynes.

PARELCON, in grammar, a figure by which a word or ſyllable is added to the end of another.

PARENCHYMA *of Plants*. Grew applies the term parenchyma to the pith or pulp, or that inner part of a fruit or plant through which the juice is ſuppoſed to be diſtributed. This, when viewed with a microſcope, appears to reſemble marrow, or rather a ſponge, being a porous, flexible, dilatable ſubſtance. Its pores are innumerable and exceedingly ſmall, receiving as much humour as is requiſite to fill and extend them, which diſpoſition of pores it is that is ſuppoſed to fit the plant for vegetation and growth.

PARENT, *Parens*, a term of relation applicable to thoſe from whom we immediately receive our being.

PARENTHESIS, in grammar, certain intercalary words, inſerted in a diſcourſe,

courſe, which interrupt the ſenſe, or thread, but ſeem neceſſary for the better underſtanding of the ſubject. The proper characteriſtic of a parentheſis is, that it may be either taken in or left out, the ſenſe and the grammar remaining intire, as the king is (notwithſtanding his attachment to favourites) a very honeſt man. In ſpeaking, the parentheſis is to be pronounced in a different tone; and in writing, it is incloſed between (), called alſo a parentheſis, but commonly a bracket, or crotchet, to diſtinguiſh it from the reſt of the diſcourſe. The politeſt of our modern writers avoid all parentheſis, as keeping the mind in ſuſpenſe, embarraſſing it, and rendering the diſcourſe leſs clear, uniform, and agreeable.

PARGET, in natural hiſtory, a name given to ſeveral kinds of gypſum, or plaſter-ſtone. See *Plaſter*.

PARGETING, in building, is uſed for the plaſtering of walls, and ſometimes for the plaſter itſelf.

PARHELIUM, or PARHELION, in phyſiology, a mock ſun, or meteor, in the form of a very bright light, appearing on one ſide of the ſun. The parhelia are formed by the reflection of the ſun's beams on a cloud properly poſited. They uſually accompany the coronæ, or luminous circles; and are placed in the ſame circumference and at the ſame height. Their colours reſemble that of the rainbow, the red and yellow are on the ſide towards the ſun, and the blue and violet on the other. There are coronæ ſometimes ſeen without parhelia, and vice verſa. Parhelia are double, triple, &c. and in 1629, a parhelion of five ſuns was ſeen at Rome; and 1666, another at Arles of ſix. M. Mariotte accounts for parhelia from an infinity of little particles of ice floating in the air, that multiply the image of the ſun by refraction or reflection.

PARIETALIA OSSA, in anatomy, the ſecond and third bones of the cranium; being called alſo oſſa-bregmatis, and oſſa-ſincipitis.

PARIETARIA, pellitory of the wall, in botany. It is perennial, common on old walls and among rubbiſh, and flowers in May. The leaves of pellitory of the wall have been uſed in cataplaſms for diſcuſſing inflammatory ſwellings: decoctions of them, and their expreſſed juice, have been given as emollient diuretics, in nephritic caſes and iſchuries; and are ſaid, when long perſiſted on, to be uſeful aperients or ſweeteners in cutaneous defedations. The plant appears to be of no great activity, being rather oleraceous than medicinal.

* PARIS, the capital city of France, in the principality or government of the iſle of France. It is advantageouſly ſituated, and one of the moſt conſiderable places in the world. It was anciently a ſmall place, though founded in the times of the ancient Gauls, and was then called Lutetia. When the Romans came into Gaul, this was the capital of a people called the Pariſians, from whom, in proceſs of time, it came to be called Paris. It contains 22,000 houſes, and 800,000 inhabitants; and many of the houſes are ſeven ſtories high. There are fifty-two pariſhes in the town and ſuburbs; 134 convents, of which fifty-ſix are for men, and ſeventy-eight for women. Paris is generally divided into three parts, the town, which is the largeſt, is ſeated on the N. ſide of the river Seine; the city, which is the leaſt but the moſt antient, conſiſts of three little iſlands in the middle of the Seine, and the univerſity, which lies on the S. ſide of the river: all which are divided into 20 quarters or wards. The whole town is of a circular form, about eighteen miles in circumference, and ſix in diameter. The houſes look handſome, being built of ſtone, and moſt of them having ſaſh-windows. The cathedral of Notre Dame, ſeated on a little iſland of the river Seine, is a venerable old Gothic ſtructure, built in the form of a croſs, and is 174 feet in length, ſixty in breadth, and 100 in height. The roof is ſupported by 120 large pillars, and the front is admired for its ſculpture, there being the ſtatues of twenty-eight of their kings. In the middle there is a ſmall ſpire, and at the weſt end are two large ſquare towers, 389 ſteps high, flat at the top, with baluſtres round them, which make the front look ſpacious and noble. From theſe towers you have a proſpect of the whole city. There are in Paris a great number of palaces and hotels, of which we ſhall only mention ſome of the principal. The Louvre is diſtinguiſhed into the Old and the New. The New Louvre is built on the ſpot where there was a caſtle. The grand front is fifty-five yards in length, and conſiſts of three advanced ſtructures and two periſtiles. The printipal entrance is into the middle ſtruccure, which is adorned with eight columns. The pediment is very remarkable, as it conſiſts only of two ſtones, fifty-four feet in length each, eight broad,

and eighteen thick. Each of the pereſtiles, which are between the three advanced ſtructures, is fifty-four yards long, and twenty broad. Their columns, which are of the Corinthian order, are fluted, and placed two and two together, being each three feet ſeven inches in diameter, and ſupport a balluſtrade, which runs all along the top. The Old Louvre is three ſtories high, and the advanced ſtructures are adorned with columns. The windows of the ſecond are highly eſteemed by the curious. The inſide of the Louvre correſponds with the magnificence of the outſide. The apartments of the queen contains a curious cieling and very fine landſcapes. The academy of ſciences, belles-lettres, architecture, and painting, are all kept in the Louvre. The ſtatues preſerved in one of theſe halls are very remarkable, though they are only copies after antiques. The Thuilleries is compoſed of five pavillions, whoſe architecture is much admired. The garden of this palace has the fineſt and moſt frequented walks in Paris. It is 720 yards in length, and 136 in breadth. Neither ſervants in livery, nor any low people, are permitted to enter it during the time of walking. The terrace on the ſide of the river, which is the greateſt ornament to the garden, is 560 yards in length, and twenty-eight in breadth. On the ſide of the palace are ſix ſtatues and four vaſes of white marble. The palace of Luxemberg is the moſt regular ſtructure in France, and is alſo very large and magnificent. There are a great many ſquares in Paris, of which three are moſt remarkable, on account of the ſtatues of bronze with which they are adorned, and theſe are, the Place Royale, that of Victoires, and that of Lewis le Grand. Of the gates, that called Port St. Denis is the moſt beautiful. It is ſeventy-two feet high, and as many broad. It is accompanied with two pyramids loaded with trophies of war. The Port St. Anthony was built as a triumphal arch for Henry II. It is adorned with many embelliſhments in ſculpture, and has a great number of inſcriptions, in memory of Lewis XIV. The port of St. Bernard is twenty yards high, and ſixteen broad; and on that ſide next the city is the figure of Lewis XIV. in alto relievo. The port of St Martin was built in 1674, in the form of a triumphal arch, and the architecture is of the ruſtic kind, with baſſo relievos on the pediments. It is about fifty feet high, and as many broad. Among the bridges, the moſt remarkable is the Pont-Neuf, which was begun in 1578, but was not finiſhed till 1604. It is 340 yards in length. It conſiſts of twelve arches, and the equeſtrian ſtatue of Henry IV. is its greateſt ornament. The Pont Royal is not ſo well ornamented as the former; but it is as ſtrong, and enjoys as agreeable a proſpect. It is 114 yards in length, ſeventeen in breadth, and conſiſts of five arches. The Pont Notre Dame was built in 1507, and has houſes built on each ſide. There are in Paris ſeveral other bridges. The obſervatory royal was erected by Lewis XIV. in 1677: here the aſtronomers are maintained at the expence of the king, to make their obſervations. There are ſeveral hoſpitals in Paris, where the poor and the infirm are aſſiſted. It is ſaid, that in the Hotel Dieu there are generally above 1000 patients; but ſtrangers ſeldom go to ſee any but the General Hoſpital, and Petites Maiſons, where mad people are kept. The General Hoſpital has ſeldom leſs than 10,000 perſons; and there are near 3000 girls that learn to make lace, and to work embroidery and tapeſtry, and theſe are generally foundlings. The Gobelins ſtands at the extremity of the ſtreet of the ſuburb of St. Marcel; where there is a great number of perſons at work, who make tapeſtry in the higheſt perfection; as alſo embroidery, painting, and ſculpture. The univerſity of Paris was founded about the latter end of the eleventh century. It conſiſted formerly of one hundred colleges; but there are now only fifty-four houſes that bear that name, and of theſe there are no more than eleven where public exerciſes are performed. One of theſe is the Sorbonne, which is thought to be one of the fineſt in Europe; from which the whole univerſity is often called the Sorbonne. The head of the univerſity is called the rector, who muſt be elected from the faculty of arts. The civil government of Paris is diſtributed among ſeveral courts of juſtice, the higheſt of which is the parliament, whoſe juriſdiction extends over the neighbouring provinces, and is the laſt reſort in all cauſes where the court does not interpoſe its authority. The other courts of Paris are the chamber of accounts, the court of aids, the mint, the court of the treaſury, the court of the waters and foreſts; the court of the conſtable and marſhals; the court of admiralty; the chatelet, or the ordinary court of juſtice for the civil government of the city; the court of the hotel-de-ville, which takes an account of the city-rents, with the taxes on all proviſions brought into Paris; and laſtly, the court of the conſuls, which takes cognizance of all things relating to trade. The trade of Paris conſiſts chiefly of the manufactures of that city, which are very conſiderable. Theſe are principally gold and ſilver ſtuffs, wrought ſilks, velvet, tapeſtry, gold and ſilver lace, ribbons, linen, and glaſs. They have two great fairs every year, one in the ſuburb of St. Germain, which begins the third of February, and continues a fortnight; and the other at St. Laurence's, which begins on the feſtival of that ſaint, and ends on the 7th of September. There are ſix principal bodies or companies of tradeſmen, out of which the conſuls, who have the regulation of trade, are choſen; namely, the drapers, grocers, apothecaries, mercers, jewellers, ſkinners, hatters, and goldſmiths. Alſo the bookſellers, vintners, wine-merchants, wool-merchants, and timber-merchants, have all particular privileges. Paris is 225 miles ſouth-eaſt of London, 235 ſouth of Amſterdam, 625 north-weſt of Vienna, 625 north-eaſt of Madrid, 675 north-weſt of Rome, 1200 north-weſt of Conſtantinople, and 870 from Liſbon.

PARISH, the precinct of a parochial church, or a circuit of ground inhabited by people belonging to one church, and are under the particular charge of its miniſter. In England there are nine thouſand, nine hundred and thirteen pariſhes, of which three thouſand eight hundred and forty-five are churches impropriate, and the reſt are annexed to colleges, or church dignities. In many of theſe pariſhes, on account of their large extent, and the number of pariſhioners, there are ſeveral chapels of eaſe.

PARISH OFFICERS, officers choſen annually to regulate and manage the concerns of the pariſh. See the articles *Churchwardens and Overſeers of the Poor.*

PARK, a large incloſure privileged for wild beaſts of chace, either by preſcription or the king's grant. No perſon can now erect a park without obtaining a licence under the broad-ſeal; but there may be ſuch in reputation, though erected without lawful warrant, and the owner may bring his action againſt perſons that kill his deer therein.

PARK is alſo uſed for a moveable incloſure, or fold, ſet up in the fields for ſheep to feed and reſt in during the night. The park is frequently removed by the ſhepherds to dung the ground one part under another.

PARK, a large net, placed on the brink of the ſea, with only one entrance, which is next the ſhore, and which is left dry by the ebb of the tide; ſo that the fiſh once got in have no way left to eſcape.

PARLEY, a conference with an enemy. Hence to beat or ſound a parley, is to give a ſignal for holding ſuch a conference by beat of drum or ſound of trumpet.

PARLIAMENT, the grand aſſembly of the three ſtates of this kingdom, ſummoned together by the king's authority, to conſult of matters relating to the public welfare, and particularly to enact and repeal laws. It conſiſts of the king, the lords ſpiritual and temporal, and the commons, and is at once the ſeat of the legiſlative authority, and the higheſt court of juſtice in Great-Britain. In the houſe of lords, criminal cauſes are tried on the impeachment of the commons; and this houſe has an original juriſdiction for the trial of peers upon indictments found by a grand jury; the lords likewiſe try ſuch cauſes as come thither on appeals from the court of chancery, and all their decrees are as judgments, and cannot be appealed from. The houſe of commons examine the right of elections, regulate diſputes concerning them, may expel their own members, and commit them to priſon; they are the grand inqueſt of the nation, and preſent public grievances or delinquents to the king and lords, in order to their being puniſhed. In ſhort, they are the repreſentatives of all the commons in the kingdom, and in them their conſtituents have placed the higheſt confidence, by inveſting them with the power of making laws, and entruſting them with all their liberties and privileges. Originally, new parliaments were called every year; but by degrees their term grew longer. In the reign of king Charles II. they were held a long time, with great interruptions between; but both methods were found of ſuch ill conſequence, that, in the beginning of the reign of king William III. an act was paſſed, by which the term of all parliaments was reſtrained to three ſeſſions, or three years; this was hence called the triennial act: but ſince that time, from other views, the period of parliaments has been lengthened to ſeven years. It is feared long parliaments will be the deſtruction of this kingdom; and Mr. Sawbridge, member for Hythe, (a real lover of his country) has ſeveral times moved to ſhorten the duration of parliaments, but to no purpoſe; for as too many of them obtain a ſeat in the ſenate by corruption, they conſider it would be more expenſive to bribe annually, than once in ſeven years. A parliament is called by the king's writ or letter directed to each lord, commanding him to appear; and by other writs, directed to the ſheriffs of each county, to ſummon the people to elect two knights for each county, and one or two burgeſſes for each borough. The number of the members in the houſe of lords is uncertain, as increaſing at the king's pleaſure. The members of the houſe of commons, when full, are five hundred aud fifty-three. If three hundred of theſe members are met, it is reckoned a full houſe; and forty may compoſe a houſe for the diſpatch of buſineſs.

Upon the holding of a parliament, the king, the firſt day, ſits in the upper houſe, under a canopy, with the crown on his head, and in his royal robes; and there, by himſelf, or the lord chancellor, declares the reaſons of their meeting, in the preſence of both the lords and commons; and then the commons are required to chooſe a ſpeaker, who is preſented to the king, and being approved by his majeſty, the buſineſs of the parliament goes on.

The lords and commons ſit each in a diſtinct apartment: in the houſe of lords, the princes of the blood ſit by themſelves on the ſide of the throne; at the wall, on the king's right hand, the two archbiſhops ſit by themſelves on a form. Below them, the biſhops of London, Durham, and Wincheſter, and all the other biſhops, ſit according to the priority of their conſecration. On the king's left hand, the lord treaſurer, lord preſident, and lord privy-ſeal, ſit upon forms above all dukes, marquiſſes, and earls, according to their creation. Acroſs the room are wool-ſacks, continued from an ancient cuſtom; and the chancellor, or keeper, being of courſe the ſpeaker of the houſe of Lords, ſits on the firſt woolſack before the throne, with the great ſeal or mace lying by him; below theſe are forms for the viſcounts and barons. On the other wool-ſacks are ſeated the judges, maſters in chancery, and king's counſel, who are only to give their advice in points of law, but they all ſtand up till the king gives them leave to ſit. The commons ſit promiſcuouſly, only the ſpeaker has a chair at the upper end of the houſe, and the clerk and his aſſiſtant ſit at a table near him. Before any buſineſs is done, all the members of the houſe of commons take the oaths of allegiance and ſupremacy, &c. and ſubſcribe their opinions againſt tranſubſtantiation, &c. and if any member of that houſe votes, or ſits there during any debate, after the ſpeaker is choſen, without having firſt taken theſe oaths, between the hours of nine and four in a full houſe, he is adjudged a popiſh recuſant convict, and incapable of any office, and forfeits five hundred pounds. The ſame teſt the lords too, though they do not take the oaths, are obliged to comply with. When the parliament is thus met, no members are to depart from it without leave. Upon extraordinary occaſions, all the members are ſometimes ſummoned, in which caſe every lord, ſpiritual and temporal, and every knight, citizen, and burgeſs is to come to parliament, except he can reaſonably and honeſtly excuſe himſelf; or be amerced: that is, reſpectively, a lord by the lords, and a commoner by the commons.

All members of parliament, in order that they may attend the public ſervice of their country, have the privilege of being freed from arreſts, attachments, impriſonments, &c. for debts, treſpaſſes, &c. but not from arreſts for treaſon, felony, and breach of the peace: however, it is ordained by ſtatute, that actions may be commenced, in any of the courts of Weſtminſter, againſt perſons intitled to privilege of parliament, after a prorogation or diſſolution, till a new parliament is called, or the ſame become re-aſſembled; and likewiſe after an adjournment for above fourteen days; and the reſpective courts, in ſuch a caſe, have power to proceed to judgment, &c. Here the proceſs is to be ſummons, diſtreſs infinite, &c. till the parties ſhall enter an appearance; and for default thereof, the real or perſonal eſtate of the defendant may be ſequeſtered; though the plaintiff may not, in that caſe, arreſt the body of any member of parliament: 12 William III. c. 3.

Anciently all the people had votes in election, till it was enacted by Henry VI. that none but freeholders, who had a yearly revenue of forty ſhillings, ſhould be admitted to vote for knights of the ſhire.

The manner of debating upon, and paſſing bills in parliament, is as follows; any member may move to have a bill brought in, which, upon a queſtion put, being agreed by the majority, this perſon, with others, is ordered to prepare and bring in the ſame. When it is ready, a time is appointed for its being read, and after the clerk's reading it, the ſpeaker reads an abſtract of it, and puts the queſtion whether or no it ſhall have a ſecond reading? and after a ſecond reading, the queſtion is put, whether or no it ſhall be committed? which is either to a committee of the whole houſe, if it be of importance, or to a private committee, any member naming the perſons. The committee being appointed, and a chairman choſen, the chairman reads the bill, paragraph by paragraph, puts every clauſe to the queſtion, fills up the blanks and makes amendments, according to the opinion of the majority. The bill thus gone through, the chairman makes his report at the ſide-bar of the houſe, reads all the additions and amendments, &c. and moves for leave to bring up the report to the table; which granted, he delivers it to the clerk, who reads the amendments, &c. The ſpeaker then puts the queſtion, whether they ſhall be read a ſecond time? and if agreed to, he reads them himſelf. To ſo many of the amendments as the houſe acquieſces in, the queſtion is now put, whether the bill, thus amended, ſhall be ingroſſed and written fair upon parchment, and read a third time; and the bill being ingroſſed, the ſpeaker holds it in his hand, and aſks if it ſhall paſs? If the majority be for it, the clerk writes on it, *Soit baillé aux ſeigneurs*, let it be delivered to the lords: or, if in the houſe of lords, *Soit baillé aux communes*, let it be delivered to the commons. If a bill be rejected, it cannot be any more propoſed during that ſeſſion. A bill for a general pardon has but one reading.

When a member of the houſe of commons ſpeaks, he ſtands up, uncovered, and directs his ſpeech to the ſpeaker only. If what he ſays be anſwered by another, he is not allowed to reply the ſame day, unleſs perſonal reflections have been caſt upon him; but when the commons, in order to have a greater freedom of debate, have reſolved themſelves into a committe of the whole houſe, every member may ſpeak to a queſtion as often as he thinks neceſſary. In the houſe of lords they vote, beginning at the puiſne, or loweſt baron, and ſo up orderly to the higheſt, every one anſwering *content* or *not content*. In the houſe of commons they vote by *yeas* and *nays*; and if it be dubious which are the greater number, the houſe divides. If the queſtion be about bringing any thing into the houſe, the *yeas* go out; but if it be about any thing the houſe already has, the *nays* go out. In all diviſions the ſpeaker appoints four tellers, two of each opinion. In a committee of the whole houſe, they divide by changing ſides, the *yeas* taking the right, and the *nays* the left of the chair; and then there are but two tellers. If a bill paſs one houſe, and the other demur to it, a conference is demanded in the painted chamber, where certain members are deputed from each houſe; and here the lords ſit covered, and the commons ſtand bare, and debate the caſe. If they diſagree, the affair is null; but if they agree, this, with the other bills that have paſſed both houſes, is brought down to the king in the houſe of lords, who comes thither clothed in his royal robes; before him the clerk of the parliament reads the title of each bill, and as he reads, the clerk of the crown pronounces the royal aſſent or diſſent. If it be a public bill, the royal aſſent is given in theſe words, *Le roy le veut*, the king will have it ſo; if private, *Soit fait comme il eſt deſiré*, let the requeſt be complied with: if the king refuſe the bill, the anſwer is, *Le roy s'aviſera*, the king will conſider of it: and if it be a money-bill, the anſwer is, *Le roy remercie ſes loyaux ſujets, accepta leur benevolence, & auſſi le veut*: the king thanks his loyal ſubjects, accepts their benevolence, and therefore grants his conſent.

* PARNASSUS, a mountain of ancient Greece, much celebrated by ancient poets. It is near Caſtro in Livadia, near the ruins of Delphos, and it is remarkable for its two tops, one of which, was conſecrated to Apollo and the Muſes, and the other to Bacchus. It is the higheſt in Greece. At the foot of this mountain, there riſes a ſpring ſuppoſed to be the ancient Caſtalian ſpring.

PAROCHIAL, ſomething belonging to a pariſh.

PARODICAL *Degrees of an Equation*, in algebra, the ſeveral regular terms in quadratic, cubic, biquadratic equations, &c. the indexes of whoſe powers aſcend or deſcend orderly in an arithmetical progreſſion, as $z^3+z^2m+zr=s$, in a cubical equation, where no term is wanting, but having all its parodic degrees, the indexes of the terms regularly deſcending thus, 3, 2, 1, 0.

PARODY, a popular maxim, adage, or proverb. Parody is alſo a poetical pleaſantry, conſiſting in applying the verſes written in one ſubject, by way of ridicule to another; or in turning a ſerious work into a burleſque, by affecting to obſerve, as nearly as poſſible, the ſame rhymes, words and cadencies.

PAROL, or PAROLE, in law, a plea in court: ſometimes this word is joined with the term leaſe; thus leaſe-parol denotes a leaſe by word of mouth, in order to diſtinguiſh it from a leaſe in writing.

PARONYCHIA, a whitlow, in ſurgery, a painful kind of tumour, ariſing at the ends of the fingers at the roots of the nails.

PAROTIDES, *Parotid Glands*, in anatomy, two large glands behind the ears.

PAROTIDES, in medicine, abſceſſes, or inflammations of the parotid glands. Theſe tumors are either mild or malignant; they are ſaid to be mild, when they ariſe ſpontaneouſly, without any preceding contagious or peſtilential diſeaſe, as they frequently do in growing children; and theſe are generally not dangerous. Of this kind alſo are thoſe which ariſe after gentle fevers, being a critical tranſlation of the diſeaſe. Thoſe bubos are called malignant, which happen in the peſtilence or venereal diſeaſe; whence they are denominated peſtilential or venereal bubos.

PAROXYSM, in medicine, the acceſs, or fit of a diſeaſe.

* PARR (Catherine) queen to Henry VIII. was the daughter of Sir Thomas Parr, of Kendall, Weſtmoreland, and though a widow, ſhe having before been married to John Neville, lord Latimer, attracted the attention of that monarch. She was celebrated for her learning, and was early educated in polite literature, as was the taſte among women of faſhion at that time in England. As ſhe advanced in life, ſhe grew fond of ſtudying the Scriptures. Several learned men, who were retained as her chaplains, preached to her every day in her privy-chamber, and frequently touched ſuch abuſes as were common in the church. This practice was approved by the king, who often permitted her to confer with him on religious ſubjects. But when diſeaſe and confinement, added to his natural impatience of contradiction, and when in the preſence of Wincheſter, and others of his party, ſhe had been urging her old topic of perfecting the reformation, the king, after ſhe retired, broke out into this expreſſion. "A good hearing it is, when women become ſuch clerks! and a thing much to my comfort, to come in my old age, to be taught of my wife!" Wincheſter improved the opportunity of aggravating the queen's inſolence; and, after inſinuating the danger of cheriſhing ſuch a ſerpent in his boſom, accuſed her of treaſon, cloaked with hereſy. The king was indeed prevailed on to give a warrant, to draw up articles that would affect her life, and the day and hour were appointed when ſhe was to be ſeized. The deſign, however, being accidentally diſcovered to her, ſhe waited upon the king, who received her kindly, and began a diſcourſe about religion. She anſwered, "that women by their creation at firſt were made ſubject to men; and they being made after the image of God, as the women were after their image, ought to inſtruct their wives, and that ſhe was much more to be taught by his majeſty, who was a prince of ſuch excellent learning and wiſdom." "Not ſo, by St. Mary," ſaid the king, "you are become a doctor, Kate, able to inſtruct us; and not to be inſtructed by us." To which ſhe replied, "that it ſeemed he had much miſtaken her freedom, in arguing with him, ſince ſhe did it to engage him in diſcourſe, to amuſe this painful time of his infirmity; and that ſhe might receive profit by his learned converſation, in which laſt point ſhe had not miſſed her aim, always referring herſelf in theſe matters, as ſhe ought, to his majeſty." "And it is even ſo, ſweet heart," ſaid the king, "then we are perfect friends again." The day, which had been appointed for carrying her to the Tower, being very fine, the king took a walk in the garden, and ſent for the queen. While they were together, the lord-chancellor, ignorant of the reconciliation, came with the guards. The king ſtepped aſide to him; and after a little converſation, was heard to call him "knave. Ay, arrant knave, a fool, and a beaſt, and bid him preſently avant out of his ſight." The queen, being ignorant on what errant they came, endeavoured, with gentle words, to pacify the king's anger, "Ah! poor ſoul," ſaid the king, "thou little knoweſt how ill he deſerves this at thy hand. On my word, ſweet heart, he has been toward thee, an arrant knave, and ſo let him go." By her thus happily conquering the king's reſentment, ſhe

ſurvived him; and at his deceaſe he bequeathed her, as a mark of his affection, a legacy of 4000 l. beſides her jointure. She was afterwards married to Sir Thomas Seymour, lord-admiral of England, and uncle to king Edward VI. She, however, lived but a very ſhort time, and very unhappily with him; for ſhe died in child-bed; and, not without ſuſpicion of poiſon. In her time. ſhe publiſhed, Prayers or Meditations, wherein the mind is ſtirred patiently to ſuffer all afflictions here, and to ſet at nought the vain Proſperitie of the Worlde, and always long for the everlaſting Felicitee, in 12mo. And among her papers were found, Queen Catherine Parr's Lamentation of a Sinner, bewailing the Ignorance of her blind Life; which was publiſhed with a preface, by the great lord Burleigh.

PARRICIDE, *Parricida*, the murder or murderer of a father, as matricide is the murder or murderer of a mother. It is alſo extended to the murder of any near relation.

PARRYING, in fencing, the action of warding off the blows aimed at one by another.

PARSLEY, in botany, an umbelliferous plant. It is biennial, a native of moiſt grounds in the ſouthern parts of Europe, and common in our culinary gardens The roots of parſley are ſometimes uſed in apozems, and ſuppoſed to be apperient and diuretic, but liable to produce flatulencies. Their taſte is ſweetiſh, accompanied with a ſlight warmth or flavour, ſomewhat reſembling that of a carrot. The leaves of the plant have a greater warmth and leſs ſweetneſs than the roots. The ſeeds, ſaid to be carminative, reſolvent, and diuretic, and commended in the German ephemerides for deſtroying cutaneous inſects in children, are in taſte warmer and more aromatic than any other part of the plant, and accompanied with a conſiderable bitterneſs. Parſley is, by ſome ſkilful perſons cultivated in fields for the uſe of ſheep, it being a ſovereign remedy to preſerve them from the rot, provided they are fed twice a week for two or three hours each time with this herb: but hares and rabbets are ſo fond of it, that they will come from a great diſtance to feed upon it; and in countries where theſe animals abound, they will deſtroy it, if it be not very ſecurely fenced againſt them; ſo that whoever chooſes to have plenty of hares in their fields, by cultivating parſley, will draw all the hares of the country to them. The beſt time for ſowing it in the fields is about the middle or latter end of February; the ground ſhould be made fine, and the ſeeds ſown pretty thick, in drills, drawn about a foot aſunder, that the ground may be kept hoed between the drills, to deſtroy the weeds, which, if permitted to grow, will ſoon over run the parſley. Two buſhels of ſeed will ſow an acre of land.

PARSNIP, paſſinacha, in botany, the name of a well-known root. The parſnip is to be propagated by ſowing its ſeeds in February or March, in a rich mellow ſoil, which muſt be deep dug, that the roots may be able to run deep without hindrance. It is a common practice to ſow carrots, at the ſame time upon the ſame ground with the parſnips; and if the carrots are deſigned to be drawn young, there is no harm in it. The parſnips, when they are grown up a little, muſt be thinned to a foot diſtance, and carefully kept clear of weeds. They are fineſt taſted, juſt at the ſeaſon when the leaves are decayed; and ſuch as are deſirous to eat them in ſpring ſhould have them taken up in autumn, and preſerved in ſand. When the ſeeds are to be ſaved, ſome very ſtrong and fine plants ſhould be left for it at four feet diſtance; and towards the end of Auguſt, or the beginning of September, the ſeeds will be ripe; they muſt then be carefully gathered, and dried on a coarſe cloth. They ſhould always be ſown the ſpring following, for they do not keep well. *Miller's Gard. Dict.*

The common wild parſnip is frequent by road ſides, and in dry paſtures; it flowers in autumn, and ripens its ſeeds ſoon after. The ſeeds deſerve to be brought into uſe in medicine, much more than they are at preſent. They are warm and carminative, though not ſo violently hot as the carraway ſeeds and others, which we commonly uſe on theſe occaſions. They diſpel flatuſes, and are in great eſteem among the country people, for curing the cholic. They alſo are diuretic and aperient, and gently promote the menſes.

PARSON, the rectory, vicar, or incumbent of a pariſh church

PARSONAGE, a rectory, or pariſh church, commonly endowed with a houſe, glebe, and tithe, for the maintenance of a miniſter, with cure of ſouls within ſuch pariſh.

PART, *Pars*, a portion of ſome

whole, conſidered as actually divided or diviſible.

Noble or eſſential PARTS, in phyſic, thoſe abſolutely neceſſary to life, as the heart, brain, &c.

Natural or genital PARTS, thoſe miniſtering to generation.

PART, in geometry and aſtronomy, is applied to the diviſion of lines and circles, &c.

Proportional PART, a part or number agreeable and analogous to ſome other part or number; or a medium to find ſome number or part unknown, by proportion and equality of reaſon.

Similar PARTS, thoſe which are to one another, as their wholes are to one another.

PART, in muſic, a piece of the ſcore, or partition, written by itſelf, for the conveniency of the muſician; or it is one or more of the ſucceſſion of ſounds, which makes the harmony, written apart. Or, the parts are the ſounds made by ſeveral perſons, ſinging or playing in concert. Muſic in parts was unknown to the ancients; they had but one part: all their harmony conſiſted in the ſucceſſion of notes, none in the conſonance. There are four principal parts, the treble, baſs, tenor, and counter tenor. Some compare the four parts in muſic to the four elements; the baſs, they ſay, repreſents the earth; the tenor, the water; counter-tenor, air: and treble, fire.

PARTS *of Speech*, in grammar, all the words that enter the compoſition of a diſcourſe, as noun, pronoun, verb, participle, adverb, conjunction, prepoſition, and interjection

* PARTHENOPE, in fabulous hiſtory, one of the Syrens, who, being to charm Ulyſſes and his companions with their ſongs, threw themſelves into the ſea. The poets ſay, that Parthenope landed in Italy, and died there. That a city was built at her tomb, from which her name was called Parthenope, now Naples

PARTERRE, in gardening, a level diviſion of ground which uſually faces the ſouth, and beſt front of an houſe; and is generally furniſhed with greens, flowers, &c. There are ſeveral ſorts of parterres, as plain graſs with borders, and parterres of embroidery, &c. Plain parterres are more beautiful in England than in any other country, by reaſon of the excellency of our turf, and that decency and unaffected ſimplicity that it affords to the eye of the ſpectators. Other parterres are cut into ſhell and ſcroll-work, with ſand-alleys between them; which ſort of parterres are eſteemed fineſt in France. As to the general proportions of parterres, an oblong or long ſquare is eſteemed the beſt: therefore a parterre ſhould not be leſs than twice as long as it is broad: twice and a half is accounted a very good proportion; and it is very rare that three times is exceeded.

PARTI, PARTIE, PARTY, or PARTED, in heraldry, is applied to a ſhield or eſcutcheon, denoting it divided or marked out into partitions.

PARTICIPATION, that which gives a part or ſhare in any thing, either by right or favour.

PARTICIPLE, *Participium*, in grammar, an adjective formed of a verb, ſo called becauſe it participates partly of the properties of a noun, and partly of thoſe of a verb; being variable through genders and caſes, like the former; and regarding time, action, paſſion, &c. in manner of the latter.

PARTICLE, in phyſiology, the minute part of a body, an aſſemblage of which conſtitute all natural bodies. It is the various arrangement and texture of theſe particles, with the difference of coheſion, &c. that conſtitute the various kinds of bodies. By this attraction of the particles, Sir Iſaac Newton ſhews, that moſt of the phænomena of the leſſer bodies are affected, as thoſe of the heavenly bodies are, by the attraction of gravity. See *Attraction* and *Gravitation*.

PARTICLES, in grammar, a denomination comprizing adverbs, prepoſitions, interjections, and conjunctions. Mr. Locke obſerves, that it is in the right uſe of particles, the clearneſs and beauty of a good ſtyle more particularly conſiſts.

PARTICULAR, *Particularis*, a relative term referring to ſpecies or individual, and oppoſed to general or univerſal.

PARTIES, in law, ſignify the perſons that are named in a deed or fine, viz. thoſe that made the deed, or levied the fine, and alſo thoſe to whom the ſame was made or levied.

PARTNER and PARTNERSHIP. See *Fellowſhip*.

PARTRIDGE, in ornithology, a ſpecies of tetrao, with a naked ſcarlet mark behind the eyes. The common partridge is too well known to need a farther deſcription: it is common in fields, and called by authors perdix. But beſides the common kind, there is another ſomewhat larger ſpecies called the red-legged partridge, with a grey tail, variegated in the upper part with brown.

PARTY, in politics, a faction conſidered as oppoſing another. In law, party-jury is one impanelled in actions brought for or againſt foreigners.

PARULIDES, in ſurgery, tumours and inflammations of the gums, commonly called gum-boils.

PASQUIN, a mutilated marble ſtatue at Rome, in a corner of the palace of the Urſini: it takes its name from a cobler of that city called Paſquin, famous for his ſneers and gibes, and who diverted himſelf with paſſing his jokes on every one who went through the ſtreet. After his death, as they were digging up the pavement before his ſhop, they found in the earth the ſtatue of an ancient gladiator, well executed, but maimed, and half ſpoiled: this they ſet up in the place where it was found, and by common conſent named it Paſquin. Since that time all ſatires are attributed to that figure, and are either put into its mouth or paſted upon it, as if they were wrote by Paſquin redivivus; and theſe are addreſſed by Paſquin to Marforio, another ſtatue at Rome. When Marforio is attacked, Paſquin comes to his aſſiſtance; and when Paſquin is attacked, Marforio aſſiſts him in his turn.

PASQUINADE, a ſatirical libel faſtened to the ſtatue of Paſquin: theſe are commonly ſhort, merry, and epigrammatic; and from hence the term has been applied to all lampoons of the ſame caſt. The difference between a paſquinade and a ſatire is, that the end of the latter is to correct and reform, while that of the former is only to ridicule and expoſe.

PASS, a ſtraight, difficult, and narrow paſſage, which ſhuts up the entrance into a country.

Birds of PASSAGE, thoſe birds which at certain ſtated ſeaſons of the year remove from certain countries, and at other ſtated times return to them again, as our quails, woodcocks, ſtorks, nightingales, ſwallows, and many other ſpecies.

Right of PASSAGE, in commerce, an impoſition or duty exacted by ſome princes, either by land or ſea, in certain cloſe and narrow places in their territories, on all veſſels and carriages, and even ſometimes on perſons or paſſengers coming in or going out of ports, &c.

PASSANT, in heraldry, a term applied to a lion, or other animal, in a ſhield, appearing to walk leiſurely: for moſt beaſts, except lions, the term trippant is frequently uſed inſtead of paſſant.

PASSIONS, in moral philoſophy, certain motions of the ſoul, which make it purſue what appears to be good, and avoid whatever threatens evil.

PASSIONS, in medicine, make one of the non-naturals, and produce very ſenſible effects Joy, anger, and fear, are the principal. In the two firſt, the ſpirits are hurried with too great vivacity; whereas, in fear or dread, they are as it were curbed and concentrated: whence we may conclude, that they have a very bad effect upon health; and therefore it will be beſt to keep them within bounds as much as poſſible, and to preſerve an inward ſerenity, calmneſs, and tranquility. Continual ſorrow and anguiſh of mind render the fluids thick, and generate viſcid and acid crudities in the ſtomach, and at length render the body unapt for a due circulation; whence proceed obſtructions of the viſcera, and many chronical diſorders. Anger conſtringes the bilious veſſels in particular, and cauſes too great an evacuation of the bile; produces ſtrictures in the ſtomach and duodenum; whence the bilious humours are amaſſed and corrupted; laying a foundation for vomiting, bilious fevers, and cardialagiæ.

PASSIONS, in painting, the external expreſſions of the different diſpoſitions and affections of the mind; but particularly their different effects upon the ſeveral features of the face; for though the arms, and indeed every part of the body, ſerve likewiſe, by their quick, languid, and variouſly diverſified motions, to expreſs the paſſions of the ſoul: yet, in painting, this difference is moſt conſpicuous in the face. In ſorrow, joy, love, ſhame, and compaſſion, the eyes ſwell all of a ſudden, are covered with a ſuperabundant moiſture, and drop tears; and in grief eſpecially, the corners of the mouth hang down, the eye-lids are half ſhut, and the pupil of the eye is elevated and half covered; and all the other muſcles of the face are relaxed, ſo that the viſage appears longer than ordinary. In fear, terror, fright, and horror, the eye-brows are greatly elevated, the eye-lids are expanded as wide as poſſible, ſo as to diſcover the white of the eye, and the pupil is depreſſed and half covered by the lower eye-lid; the hair ſtands an end; the mouth is at the ſame time wide open, and the lips ſo far drawn back, that the teeth both of the upper and under jaw appear.

Contempt is expreſſed by raiſing one ſide of the upper-lip, ſo as to diſcover the teeth, whilſt the other ſide has a movement like that in laughter; the eye, on that ſide where the teeth appear, is half ſhut, whilſt the other remains open; however, both the pupils are depreſſed.

In jealouſy, envy, hatred, and malice, the eye-brows are knit; and, in laughter, all the parts agree, tending as it were towards the center of the face.

Mr. le Brun has been extremely happy in expreſſing the ſeveral paſſions, and the examples he has left of them deſerve imitation.

PASSIONS, in poetry, are of ſingular uſe in diſtinguiſhing the characters of the actors. See *Character*.

PASSION-FLOWER, *Paſſiflora*, in botany, a genus of plants. There are ſeveral ſorts of this plant, but that which is the moſt commonly cultivated is the *paſſiflora foliis palmatis integrimus*, paſſion-flower with hard ſharped entire leaves, or the common paſſion-flower. This grows naturally in the Braſils, yet is hardy enough to thrive in the open air here, and is ſeldom injured except in very ſevere winters, which commonly kill the branches to the ground, and ſometimes deſtroys the roots: this riſes in a few years to a great height, if they have proper ſupport. I have ſeen, ſays Mr. Miller, ſome of theſe plants, whoſe branches were trained up more than forty feet high. The ſtalks will grow almoſt as large as a man's arm, and are covered with a purpliſh bark, but do not become very woody. The ſhoots from theſe ſtalks are often twelve or fifteen feet long in one ſummer; they are very ſlender, ſo muſt be ſupported, otherwiſe they will hang to the ground, intermix with each other, and appear very unſightly. This plant begins to flower early in July, and there is a ſucceſſion of flowers daily, till the froſt in autumn puts a ſtop to them.

It may be propagated by ſeeds, which ſhould be ſown upon a moderate hot-bed, which will bring up the plants much ſooner than when they are ſown in the open air, ſo they will have more time to get ſtrength before winter.

It may be alſo propagated by laying down the branches, which in one year will be well rooted, ſo may be taken off from the old plants and tranſplanted where they are deſigned to remain. The cuttings of this will alſo take root, if they are planted in a loamy ſoil not too ſtiff, in the ſpring before they begin to ſhoot. If theſe are covered with bell or hand-glaſſes to exclude the air, they will ſucceed much better than when they are otherwiſe treated; but when the cuttings put out ſhoots, the air ſhould be admitted to them, otherwiſe they will draw up weak, and ſpoil: they muſt be afterwards treated as the layers.

Thoſe plants, which are propagated by layers or cuttings, do not produce fruit ſo plentifully as the ſeedling plants; and I have found the plants which have been propagated two or three times, either by layers or cuttings, ſeldom produce fruit, which is common to many other plants. *Miller's Gard. Dict.*

PASSION-WEEK, the week next preceding the feſtival of Eaſter; ſo called, becauſe in that week our Saviour's paſſion and death happened.

PASSIVE, in general, denotes ſomething that ſuffers the action of another, called an agent, or active power. In grammar, the verb or word that expreſſes this paſſion, is termed a paſſive verb; which, in the learned languages, has a peculiar termination, as *amor*, *doceor*, &c. in Latin; that is, an *r* is added to the actives *amo*, *doceo*: and, in the Greek, the inflection is made by changing *ω* into *ομαι*, as *τυπτω*, *τυπτομαι*, &c. But, in the modern languages, the paſſive inflection is performed by means of auxiliary verbs, joined to the participle paſſive; as *I am praiſed*, in Latin *laudor*, and in Greek *εϖαινεομαι*; or, *I am loved*, in Latin *amor*, and in Greek *φιλεομαι*. Thus it appears, that the auxiliary verb *I am*, ſerves to form the paſſives of Engliſh verbs; and the ſame holds of the French, as *je ſuis loué*, I am praiſed; *j'ay été loué*, I have been praiſed, &c.

PASSOVER, a ſolemn feſtival of the Jews, celebrated on the fourteenth day of the month next after the vernal equinox, and inſtituted in commemoration of their coming out of Egypt; becauſe on the night before their departure the deſtroying angel, who put to death the firſt-born of the Egyptians, paſſed over the houſes of the Hebrews, which were ſprinkled with the blood of a lamb. The whole tranſaction is related in the twelfth chapter of Exodus. They were ordered before this feſtival to kill the paſchal lamb, and to ſprinkle their door-poſts with its blood; and the following night, which was the grand feaſt of the paſſover, and which was to continue ſeven days, they were to eat the lamb roaſted with a ſallad of wild lettuces, or other bitter herbs, in the poſture of travelles; and if any part remained the day following, it was to be thrown into the fire; and for eight days together no leavened bread was to be uſed, on pain of being cut off from the people.

PASS-PAROLE, a command given at the head of an army, and thence communicated to the rear by paſſing it from mouth to mouth.

PASS-PORT, or PASS, a licence, or writing obtained from a prince or governor, granting liberty and ſafe-conduct to paſs through his territories without moleſtation.

PASTEBOARD, a kind of thick paper formed of ſeveral ſheets of paper paſted together.

PASTE, a compoſition of water and flour, boiled to a conſiſtence, uſed by various artificers, upholſterers, bookbinders, &c. In cookery, paſte is the compoſition of flour, &c. wherein pies are baked; and in confectionary, paſte denotes a preparation of ſome fruit, made by beating the pulp thereof with ſome fluid, or other admixture; and afterwards drying it with ſugar, till as pliable as common paſte.

PASTE, in the glaſs-trade, a kind of coloured glaſs, made of a calcined cryſtal, lead, and metallic preparations, ſo as to imitate the natural gems: for the manner of effecting which, ſee *Gem*.

PASTERN *of a horſe*, in the manage, the diſtance between the joint next the foot, and the coronet of the hoof. This part ſhould be ſhort, eſpecially in middle-ſized horſes, becauſe long paſterns are weak, and cannot ſo well endure travelling.

PASTERN-JOINT, the joint next a horſe's foot.

PASTIL, or PASTEL, among painters, a kind of paſte made of different colours, ground up with gum-water, in order to make crayons. See *Crayon*.

Sometimes the crayons themſelves are called paſtils.

PASTOR, a ſhepherd, but is now generally uſed for a parſon or miniſter that hath cure of ſouls.

PASTORAL, ſomething relating to ſhepherds; hence we ſay, paſtoral life, manners, poetry, &c. The original of poetry is aſcribed to that age which ſucceeded the creation of the world: and as the keeping of flocks ſeems to have been the firſt employment of mankind, the moſt ancient ſort of poetry was, probably, paſtoral. It is natural to imagine, that the leiſure of thoſe ancient ſhepherds admitting and inviting ſome diverſion, none was ſo proper to that ſolitary and ſedentary life as ſinging; and that in their ſongs they took occaſion to celebrate their own felicity. From hence a poem was invented, and afterwards improved to a perfect image of that happy time; which, by giving us an eſteem for the virtues of a former age, might recommend them to the preſent. And ſince the life of ſhepherds was attended with more tranquillity than any other rural employment, the poets choſe to introduce their perſons, from whom it received the name of paſtoral.

A paſtoral is an imitation of the action of a ſhepherd, or one conſidered under that character. The form of this imitation is dramatic, or narrative, or mixed with both; the fable ſimple; the manners not too polite nor too ruſtic; the thoughts are plain, yet admit a little quickneſs and paſſion, but that ſhort and flowing; the expreſſion humble, yet as pure as the language will afford; neat, but not florid; eaſy, and yet lively. In ſhort, the fable, manners, thoughts, and expreſſions are full of the greateſt ſimplicity in nature. The complete character of this poem conſiſts in ſimplicity, brevity, and delicacy; the two firſt of which render an eclogue natural, and the laſt delightful.

If we would copy nature, it may be uſeful to take this idea along with us, that paſtoral is an image of what they call the golden age. So that we are no to deſcribe our ſhepherds, as ſhepherds at this day really are, but as they may be conceived then to have been, when the beſt of men followed the employment. To carry this reſemblance yet farther, it would not be amiſs to give theſe ſhepherds ſome ſkill in aſtronomy, as far as it may be uſeful to that ſort of life. And an air of piety to the gods ſhould ſhine through the poem, which ſo viſibly appears in all the works of antiquity: and it ought to preſerve ſome reliſh of the old way of writing; the connection ſhould be looſe, the narrations and deſcription ſhort, and the periods conciſe. Yet it is not ſufficient that the ſentences only be brief, the whole eclogue ſhould be ſo too. For we cannot ſuppoſe poetry, in thoſe days, to have been the buſineſs of men, but their recreation at vacant hours.

But with reſpect to the preſent age, nothing more conduces to make theſe compoſures natural, than when ſome knowledge in rural affairs is diſcovered. This may be made to appear rather done by chance than by deſign, and ſometimes is beſt ſhewn by inference; leſt, by too much ſtudy to ſeem natural, we deſtroy that eaſy ſimplicity from whence ariſes the delight. For what is inviting in this ſort of poetry proceeds not ſo much from the idea of that buſineſs, as of the tranquillity of a country life.

We muſt, therefore, uſe ſome illuſion to render a paſtoral delightful; and this conſiſts in expoſing the beſt ſide only of a ſhepherd's life, and in concealing its miſeries. Nor is it enough to introduce ſhepherds diſcourſing together in a natural way, but a regard muſt be had to the ſubject, that it contain ſome particular beauty in itſelf, and that it be different in every eclogue. Beſides, in each of them, a deſigned ſcene or proſpect is to be preſented to our view, which ſhould likewiſe have its variety. This variety is obtained, in a great degree, by frequent compariſons, drawn from the moſt agreeable objects of the country; by interrogations to things inanimate; by beautiful digreſſions, but thoſe ſhort; ſometimes by inſiſting a little on circumſtances; and, laſtly, by elegant turns on the words, which renders the numbers extremely ſweet and pleaſing. As for the numbers themſelves, though they are properly of the heroic meaſure, they ſhould be the ſmootheſt, the moſt eaſy and flowing imaginable. It is by rules like theſe we ought to judge a paſtoral. And ſince the inſtructions given for any art are to be delivered as that art is in perfection, they muſt in neceſſity be derived from thoſe in whom it is acknowledged ſo to be. It is, therefore, from the practice of Theocritus and Virgil, the only undiſputed authors of paſtoral, that the critics have drawn the foregoing notions concerning it.

Theocritus excels all others in nature and ſimplicity. The ſubjects of his Idyllia are purely paſtoral; but he is not ſo exact in his perſons, having introduced reapers and fiſhermen, as well as ſhepherds. He is apt to be too long in his deſcriptions, of which that of the cup, in the firſt paſtoral, is a remarkable inſtance. In the manners he ſeems a little defective, for his ſwains are ſometimes abuſive and immodeſt, and, perhaps, too much inclining to ruſticity; for inſtance, in his fourth and fifth Idyllia. But it is enough that all others learned their excellencies from him and that his dialect alone has a ſecret charm in it, which no other could ever attain.

Virgil, who copies Theocritus, refines upon his original; and in all points where judgment is principally concerned, he is much ſuperior to his maſter. Tho' ſome of his ſubjects are not paſtoral in themſelves, but only ſeem to be ſuch, they have a wonderful variety in them, which the Greek was a ſtranger to. He exceeds him in regularity and brevity, and falls ſhort of him in nothing but ſimplicity and propriety of ſtyle; the firſt of which perhaps was the fault of his age, and the laſt of his language.

Among the moderns, their ſucceſs has been greateſt, who have moſt endeavoured to make theſe ancients their pattern. The moſt conſiderable genius appears in the famous Taſſo and our Spencer. Taſſo, in his Aminto, has as far excelled all the paſtoral writers, as in his Gieruſalemme he has out-done the epic poets of his country. But as this piece ſeems to have been the original of a new ſort of poem, the paſtoral comedy in Italy, it cannot ſo well be conſidered as a copy of the ancients. Spencer's Calendar, in Mr. Dryden's opinion, is the moſt complete work of this kind which any nation has produced ever ſince the time of Virgil. Not but that he may be thought imperfect in ſome few points. His eclogues are ſomewhat too long, if we compare them with the ancients. He is, ſometimes too allegorical, and treats on matters of religion in a paſtoral ſtyle, as the Mantuan had done before him. He has employed the lyric meaſure, which is contrary to the practice of the old poets. His ſtanza is not always the ſame, nor always well choſen; the laſt may be the reaſon why his expreſſion is ſometimes not conciſe enough: for the tetraſtic has obliged him to extend his ſenſe to the length of four lines, which would have been more cloſely confined in the couplet.

In the manners, thoughts, and characters, he comes near to Theocritus himſelf; though, notwithſtanding all the care he has taken, he is certainly inferior in his dialect: for the Doric had its beauty and propriety in the time of Theocritus, it was uſed in part of Greece, and frequent in the mouths of many of the greateſt perſons; whereas the whole Engliſh and country phraſes of Spencer were either entirely obſolete, or ſpoken only by people of the loweſt condition. As there is a difference between ſimplicity and ruſticity, ſo the expreſſion of ſimple thoughts ſhould be plain but not clowniſh. The addition he has made of a calendar to his eclogues is very beautiful, ſince by this, beſides the general moral of innocence and ſimplicity, which is common to other authors of paſtoral, he has one peculiar to himſelf; he compares human life to the ſeveral ſeaſons, and at once expoſes to his readers a view of the great and little worlds, in their various changes and aſpects. Yet the ſcrupulous diviſion of the paſtorals into months has obliged him either to repeat the ſame deſcription in other words, for three months together, or, when it was exhauſted before, entirely to omit it: whence it comes to paſs, that ſome of his eclogues, as the 6th, 8th, and 10th, for example, have nothing but their titles to diſtinguiſh them. The reaſon is evident; becauſe the year has not that variety in it to furniſh every month with a particular deſcription, as it may every ſeaſon. Reſpecting the modern paſtoral poets, Mr. Pope and Mr. Philips ſtand among the foremoſt. I ſhall not draw a compariſon between the paſtorals of Mr. Pope and Mr. Philips, for that has been already done by Mr. Pope himſelf. Mr. Shenſtone has alſo hit upon the true nature of paſtoral compoſitions.

PASTORAL STAFF, the ſame with croſier. See *Croſier*.

PASTURE, or PASTURE-LAND, that reſerved for feeding cattle. Paſture-land is of ſuch advantage to huſbandry, that many prefer it even to corn-land, becauſe of the ſmall hazard and labour that attends it, and as it lays the foundation for moſt of the profit that is expected from the arable land, becauſe of the manure the cattle afford which are fed upon it. Where dung is not to be bought, as is often the caſe in places diſtant from large towns, the farmer is forced to proportion his arable to his paſture land, in ſuch manner that the cattle fed on the latter may be ſufficient for a ſupply of dung, ſo neceſſary for producing the fruits of the former. Paſture-lands are of three kinds: 1. The uplands; theſe lie ſo high as not to be overflowed by rivers, or land-floods. 2. Thoſe low lands which lie near rivers and fens. And, 3. Thoſe that lie near the ſea. All dung that is laid on paſture-land muſt be laid on in winter, that the rains may waſh its fatneſs into the ground before the ſun ſcorches it, or evaporates its goodneſs. Fine mould mixed with the dung, and ſpread with it over the land, is very good for paſtures; for it is waſhed down to the very roots of the graſs, and gives them a new and fine ſoil juſt in thoſe places where it is moſt wanted. The beſt manure for paſture-land is the rotten bottoms of old hay-ſtacks; for theſe moulder away into a very rich ſoil, and are always full of vaſt quantities of ſeed, fallen at times from the hay, which all grow when ſpread on the ground: and thus new nouriſhment, and a new ſet of plants, are given at once to the exhauſted ground. But as particularly uſeful as this is for paſture-ground, it is as improper for corn-land, and ſhould by no means ever be ſuffered to mix with the manure for thoſe grounds; as it will then raiſe graſs and other plants, which though of uſe in the paſture, are weeds among the corn.

PASTURE *of Plants*, a term uſed by Tull, for the nouriſhment they draw from the earth.

PASTY, in cookery, a preparation of veniſon, veal, lamb, or other meat; which being boned, beaten to a pulp, and highly ſeaſoned, is incloſed in a proper paſte, and baked in an oven.

PATE'E, or PATTE'E, in heraldry, a croſs ſmall in the center, and widening to the extremes, which are very broad.

PATELLA, in anatomy, a bone which covers the fore part of the joint of the knee, called alſo rotula, and popularly the knee-pan.

PATELLA, the LIMPET, a genus of ſhell-fiſh, with a ſimple ſhell, of a conic or other gibboſe figure, and a very wide opening at the mouth or bottom; always applying itſelf firmly to ſome ſolid body, which ſerves it inſtead of another ſhell. The animal inhabiting it is called limax.

PATENT, in general, denotes ſomething that ſtands open or expanded: thus a leaf is ſaid to be patent when it ſtands almoſt at right angles with the ſtalk.

PATENT, or LETTERS-PATENT. See *Letter*.

PATENTEE, one to whom the king has granted his letters-patent.

PATER-NOSTER, the Lord's prayer,

ſo called from the two firſt words thereof in Latin. It is alſo ſometimes uſed for a chaplet or ſtring of beads. And, in architecture, the ſame term is uſed for a ſort of ornament cut in the form of beads, either oval or round, uſed on aſtragals, baguettes, &c.

PATH, denotes the courſe or tract marked out or run over by a body in motion.

PATHETIC, whatever relates to the paſſions, or that is proper to excite or awake them. In muſic, this term is uſed for ſomething very moving, expreſſive, or paſſionate, and is capable of exciting pity, compaſſion, anger, or the like.

Pathetic Nerves, in anatomy, a pair of very ſmall nerves which ariſe in the brain, and run to the trochlear muſcle of the eye. Theſe nerves have obtained the name pathetic, from their ſerving to move the eyes in the various paſſions.

PATHOGNOMONIC, among phyſicians, an appellation for a ſymptom, or concourſe of ſymptoms, that are inſeperable from a diſtemper, and are found in that only, and in no other.

PATHOLOGY, that part of medicine which explains the nature of diſeaſes, their cauſes and ſymptoms.

PATHOS, παθος, a Greek term, literally ſignifying paſſion, is ſometimes uſed for the energy of a diſcourſe, or its power to move the paſſions.

PATIENT, among phyſicians, a perſon under the direction of a phyſician or ſurgeon, in order to be cured of ſome diſeaſe.

PATRIARCHS, among Chriſtians, eccleſiaſtical dignitaries, or biſhops, ſo called from their paternal authority in the church.

PATRIARCHAL CROSS, in heraldry, that where the ſhaft is twice croſſed; the lower arms being longer than the upper ones

PATRICIAN, among the ancient Romans, a title given to the deſcendants of the hundred, or, according to others, of the two hundred firſt ſenators choſen by Romulus, and by him called *patres*, fathers.

PATRIMONY, a right or eſtate inherited by a perſon from his anceſtors.

PATROL, in war, a round or march made by the guards, or watch, in the night-time, to obſerve what paſſes in the ſtreets, and to ſecure the peace and tranquillity of a city or camp. The patrol generally conſiſts of a body of five or ſix men, detached from a body on guard, and commanded by a ſerjeant.

PATRON, among the Romans, an appellation given to a maſter who had freed his ſlave.

Patron was alſo a name which the people of Rome gave to ſome great man, under whoſe protection they uſually put themſelves,

Patron, in the church of Rome, a ſaint whoſe name a perſon bears, or under whoſe protection he is put, and whom he takes particular care to invoke. Patron is alſo a name given to thoſe great men who protect or countenance an author, and permit him to dedicate his literary performances to him.

Patron, in the canon and common law, a perſon, who having the advowſon of a parſonage, vicarage, or the like ſpiritual promotion, belonging to his manor, hath, on that account, the gift and diſpoſition of the benefice, and may preſent to it whenever it becomes vacant.

PATRONAGE, the right of diſpoſing of a church or benefice, and enjoying ſeveral other privileges, ſuch as having the honourable rights of the church, being interred in the chancel, &c.

PATRONYMIC, among grammarians, is applied to ſuch names of men and women as are derived from thoſe of their parents or anceſtors.

PAVEMENT, a layer of ſtone, or other matter, ſerving to cover and ſtrengthen the ground for the more commodious walking on.

PAVILLION, in architecture, a kind of turret or building, uſually inſulated, and contained under a ſingle roof; ſometimes ſquare, and ſometimes in form of a dome: thus called from the reſemblance of its roof to a tent.

Pavillion, in military affairs, a tent raiſed on poſts to lodge under in the ſummer-time.

PAVO, in aſtronomy, a ſouthern conſtellation, called the peacock.

PAUSE, a ſtop or ceſſation of ſpeaking, ſinging, playing, or the like. The uſe of pointing in grammar, is to make proper pauſes in certain places. There is a pauſe in the middle of each verſe; in an hemiſtich it is called a reſt or repoſe.

Pause, in muſic, a character of ſilence, or reſt, called alſo by ſome a mute figure, becauſe it ſhews that ſome part or perſon is to be ſilent, while the reſt continue the ſong.

PAYMENT, the diſcharge of a debt,

either by caſh, or by bills of exchange, &c.

PEACE, *Pax*, in its general ſignification, ſtands in contradiſtinction to war.

PEACE, in our law-books, ſignifies a quiet and inoffenſive behaviour towards the king and his people. It is obſerved, that all authority for keeping the peace comes originally from the king, who is the ſupreme officer or magiſtrate for the preſervation of it. Alſo the lord chancellor, and judges of the king's bench, &c. have a general power to keep the peace over all the realm; as have likewiſe all courts of record within their own precincts, and ſheriffs of counties, juſtices of the peace, conſtables, &c. No perſon may break the peace without being liable to puniſhment; and where any perſon is in danger of harm, or ſome bodily prejudice from another, on oath made thereof before a juſtice of the peace, or other magiſtrate, he may be ſecured by bond or recognizance, which is commonly called binding to the peace.

PEACE *of the King*, that peace or ſecurity, both of life and goods, which the king promiſes to all his ſubjects, or others that are under his protection. There is alſo the peace of the king's highways, which is to be free from all annoyances and moleſtation; to which may be added the peace of the plough, whereby both the plough and plough-cattle are ſecured from diſtreſſes; and fairs are ſaid to have their peace, ſo that no perſon may be troubled there for debts contracted elſewhere.

PEACH, *Perſica*, in botany, the name of a genus of trees.

The fineneſs of this fruit, in general, depends on the firmneſs of the pulp, the delicacy of the flavour, and the thinneſs of the ſkin. A fine peach ſhould be of a fine deep red next the ſun, and of a pale whitiſh hue next the wall; and the pulp ſhould be of a yellow caſt, and very juicy; and the ſtone ſhould be ſmall, though the fruit in general be large.

The beſt method of ſaving the ſtones is, ſays Mr. Miller, to let ſome of the fineſt peaches of the beſt kinds hang till they drop off themſelves from the tree, and then the ſtones ſhould be immediately planted on a bed of light rich earth, planting them four inches deep in the earth, and at about four inches aſunder. The beds ſhould be covered, to preſerve them in winter; and in ſpring, when the trees come up, they muſt be cleared of weeds, and well watered. The next ſpring they ſhould be carefully taken up, and planted in the nurſery at greater diſtances: and, after two or three years ſtanding here, they may be removed to the places where they are to remain; or may at that time, when the condition of their fruit is known, be grafted on other ſtocks, which is the common way now uſed to propagate theſe trees.

The common method of propagating the peach is, by grafting. In order to this, ſome good ſtocks ſhould be provided, which ſhould be of the muſcle, or a white pear plum. When theſe ſtocks are two or three years old, they will be ſtrong enough to bud; and the common ſeaſon for doing this is about Midſummer. The buds ſhould be choſen from a healthy tree, which produces a great deal of fruit: they muſt be taken from the trees either in a cloudy day, or elſe in the morning or evening, when the ſun has not much power; they ſhould then be inoculated on the ſtalks as ſoon as poſſible, and the ſtalks treated with the uſual care afterwards. See *Inoculation*.

When theſe are to be tranſplanted where they are to remain, the moſt proper ſoil for them is a light rich paſture-land, taken up with the turf, and rotted together, before it is to be uſed; and the borders to be made with this cannot be too wide, and ought to be raiſed five or ſix inches above the level of the ground; or, if the ſoil be moiſt, more than that. They muſt be tranſplanted in autumn, as ſoon as the leaves are fallen off; and ſhould never be ſet at leſs than fourteen feet diſtance from one another. The heads of the trees are then to be raiſed up againſt the walls, to keep the roots from being moved by the winds; and they ſhould be watered at times, with a noſe on the watering pot, and the water ſprinkled all over them. In the middle of May the new ſhoots are to be nailed to the wall, training them horizontally; and the foreright ſhoots are to be rubbed off: in October the new branches ſhould be pruned, ſhortening them according to the ſtrength of the tree; if ſtrong, they may be left eight inches long; if weak, they ſhould only be left five; and the ſame care is to be taken of them for the ſucceeding years.

There are two general rules always to be obſerved in the pruning of peach and nectarine trees, which are, 1. Always to have enough bearing wood. 2. Not to lay in the branches too cloſe to one another. All peach-trees produce their fruit from the young wood, either of the ſame, or, at the moſt, of the former year's ſhoot; for this reaſon the branches are to be ſo pruned, as to encourage them to throw out new ſhoots in every part of the tree: and this is to be done in May, when, by pinching, or ſtopping the ſtrong ſhoots, there may be new wood forced out in any part of the tree. This is the method of the ſummer pruning; the winter pruning is uſually done in February or March, but it is much better done at Michaelmas, as ſoon as their leaves begin to fall; and the wounds will then have time to heal before the ſevere froſts come on.

In pruning of theſe trees it muſt always be obſerved alſo, that it is beſt done under a wood bud, not a bloſſom bud; which may be diſtinguiſhed by the wood buds being leſs turgid, and longer, and narrower than the bloſſom bud; for, if the ſhoot have not a leading bud where it is cut, it will commonly die down to the leading bud. In nailing the ſhoots to the wall, they ſhould be placed at as equal diſtances as poſſible, and ſo far apart, that the leaves may have room; and they muſt always be trained as horizontally as poſſible, that the lower part of the tree may be well wooded, which it will not be, if the branches are ſuffered to run upright. *Miller's Gardener's Dictionary.*

PEACOCK, *Pavo,* in ornithology, a genus of birds, of the order of the gallinæ, the characters of which are theſe: there are four toes on each foot, and the head is ornamented with an erect creſt of feathers. Of this genus there are ſeveral ſpecies, diſtinguiſhed by their different colours. The male of the common kind is, perhaps, the moſt gaudy of all the bird kind; the length and beauty of whoſe tail, and the various forms in which the creature carries it, are ſufficiently known and admired.

PEAK, a rocky mountainous country in the weſt of Derbyſhire, remarkable for its mines of lead and iron, &c.

PEAR, *Pyrus,* in botany. All the ſorts of pears, propagated in gardens, are produced by budding, or grafting them upon ſtocks of their own kind, which are commonly called tree-ſtocks, or elſe upon the quince or white-thorn ſtocks: but the laſt are now generally diſuſed, the fruit produced this way being apt to be dry and mealy. The quince ſtocks are, however, in great eſteem for the trees deſigned for dwarfs or for walls; becauſe they do not let the ſhoots grow ſo faſt and luxuriant. But there are objections againſt even theſe, which are of ſome conſequence; for there are many kinds of pear which will not do upon them, but will die, or become weak and good for nothing, after three or four years; and the hard-baking pears are rendered very unpleaſant by being grafted on theſe ſtocks, while the buttery or melting ones are meliorated by them. And it is to be added, that no ſort of pear will thrive upon a quince ſtock in a poor or gravelly ſoil.

PEAR TREES planted either againſt walls, or in eſpaliers, muſt not be placed nearer to one another than twenty feet. Pear-trees commonly produce their bloſſom buds firſt, at the extremity of their laſt year's ſhoots; the common way of pruning is very prejudicial, therefore, as it takes off the part which ſhould bear the fruit, and occaſions new ſhoots from the ſame branch, which will over fill the tree with wood, the trees ſhould always be carefully looked over in ſummer; and all the foreright ſhoots taken off; by which means the fruit will not be overſhaded, and the trees will need but little winter pruning. The ſeveral ſorts of ſummer pears all ripen beſt in eſpaliers, but the winter pears require a ſouth-eaſt, or ſouth-weſt, or elſe an eaſt wall. *Miller's Gard. Dict.*

PEARCH-GLUE, a kind of glue of remarkable ſtrength and purity, made from the ſkins of pearches.

PEARL, *Margarita,* in natural hiſtory, a hard, white, ſhining body, uſually roundiſh, found in a teſtaceous fiſh reſembling an oyſter. Pearls, though eſteemed of the number of gems, and highly valued, not only at this time, but in all ages, proceed only from a diſtemper in the creature that produces them, analogous to the bezoars, and other ſtony concretions in ſeveral animals of other kinds; and what the ancients imagined to be a drop of dew concreted into a pearl in the body of the pearl-fiſh, which they ſuppoſed roſe from the bottom to the ſurface of the water to receive it, is nothing more than the matter deſtined to form and enlarge the ſhell, burſting from the veſſels deſtined to carry it to the parts of the ſhell it ſhould have formed, and by that means producing theſe little concretions.

The fiſh in which theſe are uſually produced is the Eaſt Indian pearl oyſter, as it is commonly, though not very properly, called: it has a very large and broad ſhell of the bivalve kind, ſometimes meaſuring twelve or fourteen inches ever, but thoſe of eight inches are more frequent: it is not very deep; on the outſide it is of a duſky brown, and within of a very beautiful white, with tinges of ſeveral other colours, as expoſed in different directions to the light. Beſides this ſhell, there are many others that are found to produce pearls; as the common oyſter, the muſcle, the pinna marina, and ſeveral others, the pearls of which are often very good; but thoſe of the true Indian berberi, or pearl oyſter, are in general ſuperior to all. The ſmall or ſeed pearls, are alſo called ounce pearls, from their being ſold by the ounce, and not by tale, are vaſtly the moſt numerous and common; but, as in diamonds, among the multitude of ſmall ones, there are ſmaller numbers of larger found, ſo in pearls there are larger and larger kinds; but as they increaſe in ſize, they are proportionably leſs frequent, and this is one reaſon of their great price. We have Scotch pearls frequently as big as a little tare, ſome as big as a large pea, and ſome few of the ſize of a horſe-bean; but theſe are uſually of a bad ſhape, and of little value in proportion to their weight. Philip II. of Spain had a pearl perfect in its ſhape and colour, and of the ſize of a pigeon's egg. De Boot tells us of one in the emperor Rodolph's poſſeſſion, of thirty carrats weight; Tavernier mentions one in Perſia, for which that crown paid to the amount of more than a hundred thouſand pounds ſterling; and we are told of Cleopatra's poſſeſſing one worth fourſcore thouſand pounds of our money; pearls of ſuch vaſt ſizes as theſe are as rare as the great diamonds; but, as among diamonds, there are a conſiderable number, which though very ſhort of this, are of great value. The fineſt and what is called the true ſhape of the pearl, is a perfect round; but if pearls of a conſiderable ſize are of the ſhape of a pear, as is not unfrequently the caſe, they are not leſs valued, as they ſerve for earings and other ornaments. Their colour ought to be a pure white, and that not a dead and lifeleſs, but a clear and brilliant one; they muſt be perfectly free from any foulneſs, ſpot, or ſtain, and their ſurfaces muſt be naturally ſmooth and gloſſy, for they bring their natural poliſh with them, which art is not able to improve.

This valuable article of commerce is not the product of any peculiar part of the world. The Eaſt-Indies and America produce the pearl ſhell-fiſh in abundance, and it is found with good pearls in many parts of Europe. The coaſts of the iſland Ceylon afford pearls ſuperior to thoſe of all the Eaſt in the beauty of their colour, but there are no very large ones found there. The Perſian gulph abounds with the pearl-fiſh, and fiſheries are eſtabliſhed on the coaſt of the ſeveral iſlands in it. In America, there are fiſheries in the gulph of Mexico, and along the coaſt of Terra Firma, all which yield conſiderable advantage. The European pearls are principally found on the coaſts of Scotland, and the neighbouring parts. The pearls met with in apothecaries ſhops are of various kinds, all that are unfit for the jewellers purpoſes coming thither; conſequently ſome of the rough and ill ſhaped pearls, and thoſe of bad colours, are at times to be met with there; though the generality are what are only too ſmall for working into toys, &c. Theſe, after levigation, make an impalpable powder, which is much talked of as an ingredient in what is called pearl-cordials; but moſt of the apothecaries uſe only levigated oyſter-ſhell under its name.

Manner of fiſhing for PEARLS *in the Eaſt Indies.* There are two ſeaſons for pearl-fiſhing, the firſt is in March and April, and the laſt in Auguſt and September; and the more rain there falls in the year, the more plentiful are theſe fiſheries. At the beginning of the ſeaſon there are ſometimes two hundred and fifty barks on the banks; the larger barks having two divers, and the ſmaller one. Each bark puts off from the ſhore at ſun-riſe, with a land-breeze, which never fails; and returns again by a ſea-breeze, which ſucceeds it about noon. As ſoon as the barks arrive at the place where the fiſh lie, and have caſt anchor, each diver binds a ſtone ſix inches thick, and a foot long, under his body; which ſerves him as ballaſt, prevents his being driven away by the motion of the water, and enables him to walk more ſteadily under the waves. They alſo tie another very heavy ſtone to one foot, by which they are ſpeedily ſunk to the bottom of the ſea: and as the oyſters are uſually firmly faſtened to the rocks, they arm their hands with leathern mittens to prevent their being wounded in pulling them violently off; but this taſk ſome perform with an iron-rake. In the laſt place, each diver carries down with him a large net in the manner of a ſack, tied to his neck by a long cord, the other end of which is faſtened to the ſide of the bark. This net is to hold the oyſters gathered from the

the rock, and the cord is to pull up the diver when his bag is full, or he wants air. See *Diving*.

In this equipage he ſometimes precipitates himſelf ſixty feet under water; and as he has no time to loſe, he no ſooner arrives at the bottom, than he begins to run from ſide to ſide, tearing up all the oyſters he meets with, and cramming them into his budget.

At whatever depth the divers are, the light is ſo great that they eaſily ſee whatever paſſes in the ſea: and to their great conſternation ſometimes perceive monſtrous fiſhes, from which all their addreſs in muddying the water, &c. will not always ſave them, but they unhappily become their prey: and of all the dangers of the fiſhery, this is one of the greateſt and moſt uſual. The beſt divers will keep under water near half an hour, and the reſt do not ſtay leſs than a quarter. During this time they hold their breath without the uſe of oils, or any other liquors; only acquiring the habit by long practice. When they find themſelves ſtreightened, they pull the rope to which the bag is faſtened, and hold faſt by it with both hands; when thoſe in the bark, taking the ſignal, heave them up into the air, and unload them of their fiſh, which is ſometimes five hundred oyſters, and ſometimes not above fifty. Some of the divers need a moment's reſpite to recover breath; others jump in again inſtantly, continuing this violent exerciſe without intermiſſion for ſeveral hours.

Manner of fiſhing for PEARLS *in America*. The firſt to whom the Indians made this valuable diſcovery, was Baſco Nunez de Balboa, who in his paſſage for making further diſcoveries on the South-ſea, was preſented with ſome pearls by Tumaco, an Indian prince. At preſent they are found in ſuch plenty, that there are few perſons of ſubſtance near Panama, who do not employ all, or, at leaſt, part of their ſlaves in this fiſhery, the manner of which not being commonly known, it will not be improper to deſcribe it here.

The owners of the negroes employ the moſt proper perſons for this fiſhery, which being performed at the bottom of the ſea, they muſt be both expert ſwimmers, and capable of holding their breath a long time. Theſe they ſend to the iſlands, where they have huts built for their lodgings, and boats which hold eight, ten, or twenty negroes under the command of an officer. In theſe boats they go to ſuch parts as are known to produce pearls, and where the depth of the water is not above ten, twelve, or fifteen fathom. Here they come to an anchor, and the negroes having a rope faſtened round their bodies, and the other end to the ſide of the boat, they take with them a ſmall weight to accelerate their ſinking, and plunge into the water. On reaching the bottom they take up an oyſter, which they put under the left arm; the ſecond they hold in their left hand, and the third in their right; with theſe three oyſters, and ſometimes another in their mouth, they riſe to breathe, and put them in a bag. When they have reſted themſelves a while and recovered their breath, they dive a ſecond time; and thus continue, till they have either completed their taſk, or their ſtrength fails them. Every one of theſe negro divers is obliged daily to deliver his maſter a certain fixed number of pearls; ſo that when they have got the requiſite number of oyſters in their bag, they begin to open them, and deliver the pearls to the officer, till they have made up the number due to their maſter; and if the pearl be but formed, it is ſufficient, without any regard to its being ſmall or faulty. The remainder, however large or beautiful, are the negroe's own property, nor has the maſter the leaſt claim to them, the ſlaves being allowed to ſell them to whom they pleaſe, though the maſter generally purchaſes them at a very ſmall price.

Theſe negroes cannot every day make up their number, as in many of the oyſters the pearl is not at all, or but imperfectly formed, or the oyſter is dead, whereby the pearl is ſo damaged as to be of no value; and as no allowance is made for ſuch pearls, they muſt make up their numbers with others

Beſides the toil of this fiſhery, from the oyſters ſtrongly adhering to the rocks, they are alſo in no ſmall danger from ſome kinds of fiſh, which either ſeize the negroes, or by ſtriking on them, cruſh them by their weight againſt the bottom. Every negroe to defend himſelf againſt theſe animals, carries with him a ſharp knife, with which if the fiſh offers to aſſault him, he endeavours to ſtrike it in a part where it has no power to hurt him; on which the fiſh immediately flies. The officers keep a watchful eye on thoſe voracious creatures, and on diſcovering them, ſhake the ropes faſtened to the negroes bodies, that they may be upon their guard; many, on the divers being in danger, have thrown themſelves into the water, with the like weapon, and haſten down to their defence: but too often all their dexterity and precaution is not ſufficient to protect the diver from being devoured by theſe fiſh, or loſing one of his legs or arms by their bite. Several ſchemes have been practiſed to prevent ſuch melancholy accidents; but they have hitherto proved very ineffectual.

The pearls of theſe fiſheries are generally of a good water, and ſome very remarkable both in their ſhape and ſize; but there is a difference in their water and colour; ſome being highly valuable, and others as remarkably defective. Some of theſe pearls, though indeed but few, are ſent to Europe, the greateſt part being carried to Lima: where the demand for them is very great, being not only univerſally worn there by all perſons of rank, but alſo ſent from thence into the inland parts of Peru.

Mother of PEARL, the ſhell, not of the pearl-oyſter, but of another ſea fiſh of the oyſter kind. This ſhell on the inſide is extremely ſmooth, and of the whiteneſs and water of pearl itſelf; and it has the ſame luſtre on the outſide, after the firſt laminæ or ſcales have been cleared off with aqua fortis, and the lapidaries mill. Mother of pearl is uſed in inlaid-works, and in ſeveral toys, as ſnuff-boxes, &c.

PEARL, in heraldry, in blazoning with precious ſtones, is the ſame with argent or white

PEAT, a kind of turf uſed for fuel in ſeveral countries.

PEBBLES, *Calculi*, ſmall ſtones, compoſed of a cryſtaline matter debaſed by earths, and hence ſubject to veins, clouds, and other variegations.

PECCANT, in medicine, a term uſed for thoſe humours of the body which offend either by their quantity or quality.

PECK, a meaſure of capacity, four of which make a buſhel.

PECTORAL, an epithet for medicines good for diſorders of the breaſt and lungs. The ordinary intention of theſe medicines is either to attenuate or thicken the humours of theſe parts, and to render them fit to be expectorated or ſpit out.

PECTORALIS, in anatomy, a pair of muſcles which poſſeſſes almoſt the whole breaſt, and ſerves to move the arm forwards. Naturaliſts obſerve a ſingular mark of providence, in the ſize and ſtrength of the pectoral muſcle in different animals. It is by the action of this muſcle, that the flying of birds is chiefly performed; and therefore much larger and ſtronger in birds, than in any animals not made for flight.

PECULIAR, in the canon law, ſignifies a particular pariſh or church that has juriſdiction within itſelf for granting probates of wills, and adminiſtration, exempt from the ordinary or biſhop's courts. The king's chapel is a royal peculiar, exempt from all ſpiritual juriſdiction, and reſerved to the viſitations and immediate government of the king himſelf. There is likewiſe the archbiſhop's peculiar; for it is an ancient privilege of the ſee of Canterbury, that wherever any manors or advowſons belong to it, they forthwith become exempt from the ordinary, and are reputed peculiars: there are fifty-ſeven ſuch peculiars in the ſee of Canterbury. Beſides theſe, there are ſome peculiars belonging to deans, chapters, and prebendaries, which are only exempted from the juriſdiction of the archdeacon; theſe are derived from the biſhop, who may viſit them, and to whom there lies an appeal.

Court of PECULIARS, a court in which the affairs belonging to peculiars are tranſacted.

PEDAGOGUE, or PÆDAGOGUE, παιδαγωγος, a tutor or maſter, to whom is committed the diſcipline and direction of a ſcholar, to be inſtructed in grammar and other arts.

PEDANT, a rough unpoliſhed man of letters, who makes an impertinent uſe of the ſciences, and abounds in unſeaſonable criticiſms and obſervations. Dacier defines a pedant, a perſon who has more reading than good ſenſe; and Malebranche deſcribes him, as a man full of falſe erudition, who makes a parade of his knowledge, and is ever quoting ſome Greek or Latin author, or hunting back to a remote etymology.

PEDANTRY, the quality or manner of a pedant.

PEDESTAL, in architecture, the loweſt part of an order of columns, being that which ſuſtains the column, and ſerves it as a foot or ſtand The pedeſtal conſiſts of three principal parts, viz a ſquare, trunk, or dye, which makes the body; a corniche, the head; and a baſe, the foot of the pedeſtal. The pedeſtal is properly an apendage to a column, not an eſſential part of it; though M. Le Clerc thinks it eſſential to a complete order. There are as many kinds of pedeſtals as there are of orders of columns, viz. the Tuſcan, Doric, Ionic, Corinthian, and Compoſite.

PEDESTALS *of Statues*, ſuch as ſerve to ſupport ſtatutes of figures. Vignola obſerves, that there is no part of architecture more arbitrary, and in which more liberty may be taken, than in the pedeſtals of ſtatues; there being no rules or laws preſcribed by antiquity, nor any ſettled even by the moderns.

PEDICLE, among botaniſts, that part of a ſtalk which immediately ſuſtains the leaf of a flower or a fruit, and is commonly called a foot-ſtalk.

PEDICULUS, *Louſe*, in zoology, a genus of inſects. Moſt animals are infeſted with lice, or inſects which feed upon them: thus ſheep have one ſpecies, oxen another, &c and mankind are not free from them; for beſides the common kind, whoſe natural habitation is in the heads of children, there is another kind called the crab louſe, whoſe natural reſidence is about the pubes. Authors alſo reckon the death-watch among the number of lice.

PEDILUVIUM, a bathing of the feet. This bath may be prepared of the ſame ingredients with other baths. It may either conſiſt of light, pure water alone; or, to correct the qualities of heavy and hard water, a lixivium of bran of wheat or chamomile-flowers may be added. Pediluvium is highly expedient for the purpoſes of derivation in thoſe diſeaſes which ariſe from congeſtions of the humours to the head and breaſt, produced by ſpaſms of the inferior parts, and eſpecially of the hypochondria. Among this kind, beſides lethargic diſeaſes, we may reckon almoſt all diſorders of the head, ſuch as madneſs, melancholy, cephalæas, hemicranias, the clavus hyſtericus, vertigo's, tooth-achs, pains of the ears, a gutta roſacea; inflammations and defluxion of ſaline humours on the eyes, immoderate hæmorrhages from the noſe, and long watchings. Of this kind are alſo ſome diſorders which affect the breaſt, ſuch as convulſive aſthmas, dyſpnœas ariſing from a plethora, palpitations of the heart, dry coughs, and ſpittings of blood. Beſides, baths for the feet in conſequence of their ſingular efficacy in relaxing ſpaſms, are highly beneficial in ſpaſmodic and convulſive diſorders, in pains, cardialgias, colics, eſpecially of the hæmorrhoidal kind, gripes produced by the ſtone, and inflations of the ſtomach.

It is to be obſerved, that pediluvium produces more happy effects, if before it is uſed the quantity of blood is leſſened by veneſection in the foot: it ſhould be uſed about bed-time; and the feet kept warm till the patient goes to bed, by which means perſpiration all over the body is increaſed.

PEDIGREE. See *Deſcent.*

PEDIMENT, in architecture, a kind of low pinnacle, ſerving to crown an ordinance, or finiſh a frontiſpiece, and is placed as an ornament over gates, doors, windows, niches, altars, &c. being ordinarily of a triangular form, but ſometimes forming an arch of a circle. The parts of a pediment are the tympanum and the corniche, which crowns it, and the entablature, which ſerves it as a baſe, or ſcale. Architects have taken a great deal of liberty in the form of this member; nor do they vary leſs as to the proportion of the pediment. The moſt beautiful, according to Daviler, is that where its height is about one fifth of the length of its baſe.

The pediment is uſually triangular, and ſometimes an equilateral triangle, called alſo a pointed pediment; it is ſometimes circular, though M. Felibien obſerves, that we have no inſtance of round pediments in the antique, beſides thoſe in the chapels of the rotundo. Sometimes its upper corniche is divided into three or four ſides, or right lines: ſometimes the corniche is cut or open a-top, which is an abuſe introduced by the moderns, particularly Michael Angelo; for the deſign of this part over doors, windows, &c. being chiefly to ſhelter thoſe underneath from the rain, to leave it open in the middle is to fruſtrate its end. Sometimes the pediment is formed of a couple of ſcrolls or wreaths like two conſoles joined together; ſometimes again it is without a baſe or its lower corniche is cut out, all but what is beſtowed on two columns or pilaſters, and on theſe is raiſed an arch or ſweep, inſtead of an entablature, of which Serlio gives an inſtance in the antique in a Corinthian gate at Foligny, in Umbria; and Daviler a modern one in the church of St. Peter at Rome.

Under this kind of pediments come thoſe little arched corniches, which form pediments over doors and windows, ſupported by two conſoles, inſtead either of entablature or columns.

Sometimes the pediment is made double, i. e. a leſs pediment is made in the tympanum of a larger, on account of ſome projecture in the middle, as the frontiſpiece of the church of the Great Jeſus at Rome; but this is accounted an abuſe in architecture, though authoriſed by very good buildings, as the large pavilion of the Louvre, where the caryatides ſupport three pediments, one in another: ſometimes the tympanum of the pediment is cut out, or left open to let in light, as is ſeen under the portico of the capitol at Rome; laſtly, this open pediment is ſometimes triangular, and enriched with ſculpture, as roſes, leaves, &c. as is found in moſt of the Gothic churches.

M. Le Clerc obſerves, that the modillions in the corniche of the pediment ſhould always anſwer exactly over thoſe of the entablature. Indeed Vitruvius ſays, that the ancients did not allow of any modillions at all in pediments. M. Le Clerc alſo obſerves, that the corniche which ſerves the pediment as a baſe, ſhould have no cymatium, by reaſon the cymatium of the reſt of the entablature, when it meets the pediment, paſſes over it. This change of determination occaſions a conſiderable difficulty; the cymatium in this caſe appearing too broad in the turn of the angle, to remedy which architects have recourſe to ſeveral expedients.

A pointed pediment may crown three arches, but a circular pediment can only crown agreeably. There ſhould never be uſed more than two tympana over each other in the ſame frontiſpiece, and even where there are two, it would be proper to have the lower circular, and the upper pointed.

PEDRERO, Peterero, or Paterero, a ſmall piece of ordnance, uſed on board ſhips, for the diſcharging of nails, broken iron, or partridge ſhot, on an enemy attempting to board. They are generally open at the breach, and their chamber made to take out, to be loaded that way, inſtead of at the muzzle.

PEDUNCULI CEREBELLI, in anatomy, three medullary proceſſes of the cerebellum, whereby that part is joined to the medulla oblongata.

PEER, in general, ſignifies an equal, or one of the ſame rank and ſtation. The term peers is now applied to thoſe who are impannelled in an inqueſt upon a perſon for convicting or acquitting him of any offence laid to his charge; and the reaſon why the jury is ſo called, is becauſe by the common law, and the cuſtom of this kingdom, every perſon is to be tried by his peers or equals, a lord by the lords, and a commoner by commoners.

Peer *of the Realm*, a noble lord who has a ſeat and vote in the houſe of lords. Theſe lords are called peers, becauſe, though there is a diſtinction of degrees in our nobility, yet in public actions they are equal, as in their votes in parliament, and in trying any nobleman or other perſon impeached by the commons, &c.

PEERESS, a woman who is noble by deſcent, creation, or marriage.

PEGASUS, among the poets, a horſe imagined to have wings, being that whereon Bellerophon was fabled to be mounted, when he engaged the chimæra.

The opening of the fountain Hippocrene, on mount Helicon, is aſcribed to a blow of Pegaſus's hoof. Pegaſus was feigned to have flown away to heaven, where it became a conſtellation.

PEGASUS, in aſtronomy, a conſtellation of the northern hemiſphere, in form of a flying horſe, ſaid by different authors to contain nineteen, twenty, and ninety-three ſtars.

* PEGASUS, in fabulous hiſtory, a winged horſe, produced as ſome ſay, by Neptune, and others, that he ſprung from the blood of Meduſa, when Perſeus cut off her head. With a ſtroke of his hoof, he cauſed the fountain Hippocrene to ſpring out of the earth. Bellerophon mounted him in order to attack Chimæra, after which Pegaſus is ſaid to have been placed among the ſtars. Mythologiſts give different interpretations of this fable. Some imagine that he was a very ſwift running horſe, and others that he was a ſhip belonging to Bellerophon.

* PEGU, a kingdom of the Eaſt Indies, on the S. E. ſide of the bay of Bengal in Aſia. It is bounded on the N. by the kingdom of Ava, on the W. and S. by the ocean, and on the E. by the kingdoms of Laos and Siam. It has a town of the ſame name, 70 miles within land, and was a ſtrong place, above 20 miles in circumference; but is at preſent very thinly inhabited. The product of this country is timber for building, elephants-teeth, bees-wax, ſticklac, iron, tin, pertolæum, very fine rubies, and ſmall diamonds. They have alſo ſaltpetre, and plenty of lead, of which they make their money. It is very fruitful in corn, roots, pulſe, and fruits. and wild game is very common. They have alſo good

good fiſh, pork, and poultry. The government is arbitrary, the king's will being a law; and yet he does not often abuſe his power. He has a large handſome ſtone palace at Ava. The inhabitants are but thinly clad, and the beſt among them wear neither ſhoes nor ſtockings. The Barmaes go almoſt naked, and make figures on their ſkins like the ancient Picts, by pricking them in with a bodkin, and rubbing them over with charcoal. The women are much whiter than the men, and are ſmall, but well proportioned. They wear petticoats, which are open before: the women are very fond of ſtrangers; and any man may have a wife for the time he ſtays there. The wife goes to market, dreſſes the victuals, takes care of her huſband's cloaths, and ſells his goods by retail. If ſhe proves falſe, the huſband may ſell her for a ſlave, and if he goes aſtray, ſhe will give him a doſe of poiſon. There are a vaſt number of temples in this country, but moſt of wood, which are varniſhed and gilded. The prieſts have ground allowed them, which they cultivate for their ſubſiſtence; and they are ſaid to be ſtrict obſervers of morality. They are called Talapoins, and inculcate charity as the higheſt virtue, affirming that religion to be the beſt which teaches men to do moſt good. They have idols in their temples in a ſitting poſture, like taylors, and they have all very large ears. When any perſons happen to be ſhipwrecked on the coaſt, if they repair to the temples, they will be taken care of, and ſupplied with what they want. In the low flat part of the country, liable to be overflowed, they build their houſes upon ſtakes; and then in times of inundations, they communicate with each other by boats. The king of Ava, who reſides at the palace abovementioned, is now maſter of Pegu, Long. 97. 8. E. Lat. 17. 26. N.

* PEKIN, or PEKING, a city, and the metropolis of the whole empire of China, where the emperor generally keeps his court, is ſeated in a very fruitful plain, 60 miles S. of the great wall, and is of an exact ſquare. It is divided into two parts; the New or Tartars city; and the Old or Chineſe city. The circumference of the walls, excluſive of the ſuburbs, is about 52 Chineſe lys, which contain 240 geometrical paces each. The walls are high and broad, and a horſe may aſcend to the top of thoſe of the new city by a ſlope of a great length. They have towers within a bow-ſhot of each other, and the gates, which are high with ſtrong arches, ſupport pavilions 9 ſtories high. Each ſtory has windows or port-holes, and in the loweſt there is a large hall for the officers and ſoldiers, when they come off the guard. Before each gate there is a parade, ſurrounded by a ſemi-circular wall. All the gates of the city, which are 9 in number, are built alike, and are well furniſhed with artillery. The chief ſtreets are as ſtrait as a line, 3 miles in length, and 120 feet wide, with ſhops on each ſide of the way. The houſes are wretchedly built, and low, being chiefly of one ſtory, which makes it ſurpriſing that there are ſuch vaſt crowds of men in the ſtreets; for there is not a woman to be ſeen among them. There is alſo a prodigious number of horſes, mules, aſſes, camels, carts, waggons, and chairs; not to mention the people that gather round fortune-tellers, jugglers, ballad-ſingers, quack-doctors, and the like. For this reaſon perſons of diſtinction have always horſemen going before them to clear the way; on which account, thoſe that can afford it, paſs through the ſtreets in chairs, or on horſes, which ſtand to be hired at an eaſy rate, and the owners lead them along to make way. Theſe are the more convenient, becauſe they know the place where every conſiderable perſon lives. Every thing is ſo well managed here, that there is ſeldom any diſturbance, and a robbery, or burglary, does not happen in many years; and when they do, the criminals never eſcape being taken. Every great ſtreet has night and day a guard of ſoldiers, with ſwords by their ſides, and whips in their hands, wherewith they are ready to chaſtiſe offenders; they have likewiſe a power to take into cuſtody thoſe who reſiſt, or begin a quarrel. The ends of the little ſtreets where they come into the greater, have lattice gates. Theſe gates are ſhut at night, and are ſeldom opened unleſs to perſons well known, who carry a lanthorn in their hand, and give a reaſon for their being out at that time of night. The ſouthern gate of this city is likewiſe the gate of the emperor's palace, which is a prodigious heap of great buildings, with large courts and gardens. This has battlements along the curtain, and is adorned with little pavillions at the angles. The architecture of the imperial palace is entirely different from that of Europe, and yet it ſtrikes the eye by its

grandeur. The roofs which join to the walls are ſupported by a foreſt of beams, joiſts, and ſpars, all japaned with gold flowers on a green ground. The terraces upon which the apartments are built, are about 15 feet high, and caſed with white marble, and are adorned with a baluſtrade of tolerable workmanſhip. Long. 116. 41. E. Lat. 39. 54. N.

PELECOIDES, in geometry, a figure in form of an hatchet; ſuch is the figure B C D A, plate XLI. *fig.* 5. contained under the two inverted quadrantal arcs A B and A D, and the ſemi-circle B C D. The area of the pelecoides is demonſtrated to be equal to the ſquare A C, and that again to the parallelogram E B. It is equal to the ſquare A C, becauſe it wants of the ſquare on the left hand the two ſegments A B and A C, which are equal to the two ſegments B C and C D, by which it exceeds on the right hand.

* PELIAS, in fabulous hiſtory, the ſon of Neptune by Tiro, and the brother of Æſon, king of Theſſaly, uſurped the kingdom to the prejudice of Jaſon, his nephew, who was concealed from his fury. Jaſon, having attained the age of 20 years, made himſelf known to his parents, and demanded the poſſeſſion of his dominions. This Pelias could not refuſe, he however prevailed on him to undertake the conqueſt of the Golden Fleece, hoping that he would periſh in that expedition. Pelias became at length more haughty and cruel, and was murdered by his own daughters, in attempting, by Medea's advice, to reſtore him to youth

PELICAN, *Pelicanus*, in ornithology, a genus of birds, of the order of the anſeres, the beak of which is very long, crooked, and unguiculated at the extremity: its ſides are not denticulated, and the anterior part towards the head is naked.

PELICAN, in chemiſtry, a kind of double veſſel, generally made of glaſs, and uſed in extracting tinctures by circulation.

PELLUCID, the ſame with diaphanous or tranſparent, and ſtands oppoſed to opaque. See *Tranſparent.*

PELVIS, the inferior part of the cavity of the abdomen, ſo called from its reſembling a baſon or ewer, in Latin called pelvis. See *Abdomen.*

PELVIS *of the Kidneys*, a membranaceous cavity in the kidneys, which receives the urine, and conveys it to the ureters.

* PEMBROKE, the county town of Pembrokeſhire, in S. Wales. It has a market on Saturdays, and 4 fairs, May 14, Trinity-Monday, July 10, and September 25, for cattle, horſes, ſheep, and cloth. It is ſeated on the eaſtern or innermoſt creek of Milford-haven; over which it has two handſome bridges. It is well inhabited by gentlemen and tradeſmen. As this town is frequented by ſhips, it has a cuſtom-houſe, and is fortified with a wall, which has ſeveral towers, and 3 gates. It has 3 pariſh churches, and its houſes are well built. It is governed by a mayor, 2 bailiffs, and ſub-officers, and ſends one member to parliament. It gives title of Earl to a branch of the Herbert family. It is 236 miles W. by S. from London.

* PEMBROKESHIRE, a county of South Wales, bounded on the E. by the counties or Cardigan and Camarthen, and on the N. W. and S. by the Iriſh ſea. It is one of the beſt of the Welch counties, having plenty of paſture land, and cattle. It has alſo a great many rivers, and plenty of good fiſh, as well from thence as out of the ſea; as alſo water-fowls in large quantities. It is likewiſe noted for its pit-coal. Its extent from E. to W. is about 20 miles, and from N. to S. about 26. It is in the dioceſe of St. David's, and contains 45 pariſhes, and 9 towns. Pembroke is the ſhire town, and St. David's is a biſhop's ſee.

PENANCE, a puniſhment either voluntary, or impoſed by authority for the crimes a perſon has committed.

PENATES, in Roman antiquity, were a kind of tutelar deities, either of countries or particular houſes; in the latter ſenſe they were the ſame with the lares.

PENCIL, an inſtrument uſed by painters for laying on colours. Pencils are of various kinds, and made of various materials.

PENCIL, an inſtrument uſed in drawing, &c. made of long pieces of black-lead, or red-chalk, placed in a groove cut in a ſlip of cedar, on which other pieces of cedar being glued, the whole is planed round, and one of the ends being cut to a point, it is fit for uſe.

PENDANT, an ornament ſuſpended to the ear, frequently conſiſting of diamonds, pearls, and other precious ſtones.

PENDULOUS, applied to any thing that bends or hangs downwards: thus, the flowers, whoſe ſlender ſtalks are not able to ſuſtain their heads upright, are called pendulous flowers.

PENDULUM, in mechanics, any heavy body ſo ſuſpended, as that it may vibrate backwards and forwards, about ſome fixed point, by the force of gravity. The word is derived from the Latin *pendeo*, to hang, or be ſuſpended. A pendulum is any body, as B (plate XLI. *fig.* 6.) ſuſpended upon, and moving about a point A as a center. The nature of a pendulum conſiſts in the following particulars: 1. The times of the vibrations of a pendulum, in very ſmall arches are all equal. 2. The velocity of the bob, in the loweſt point, will be nearly as the length of the chord of the arch which it deſcribes in the deſcent. 3. The times of vibration in different pendulums, A B, A C, are directly as the ſquare roots of their lengths. 4. The time of one vibration is to the time of the deſcent, through half the length of the pendulum, as the circumference of a circle to its diameter. 5. The quantity of matter in the pendulous body is as the weight and the ſquare of the time directly, and the length of the pendulum inverſely. 6. Whence the length of a pendulum, vibrating ſeconds, will be found 39 inches nearly; and of one half-ſecond pendulum 9,8 inches.

From theſe properties of the pendulum we may diſcern its uſe as an univerſal chronometer, or regulator of time, as it is uſed in clocks, and ſuch-like machines By this inſtrument alſo we can meaſure the diſtance of a ſhip, by meaſuring the interval of time between the fire and the ſound of the gun; alſo the diſtance of a cloud, by numbering the ſeconds, or half ſeconds, between the lightning and thunder. Thus, ſuppoſe between the lightning and thunder, we number 10 ſeconds; then, becauſe ſound paſſes through 1142 feet in one ſecond, we have the diſtance of the cloud equal to 11420 feet. Again, the height of any room, or other object, may be meaſured by a pendulum vibrating from the top thereof. Thus, ſuppoſe a pendulum from the height of a room vibrates once in three ſeconds; then ſay, as 1 is to the ſquare of 3, viz. 9, ſo is 39,2 to 352,8 feet, the height required. Laſtly, by the pendulum we diſcover the different force of gravity on diverſe parts of the earth's ſurface, and thence the true figure of the earth. See the article *Earth*.

The greateſt inconvenience attending this moſt uſeful inſtrument is, that it is conſtantly liable to an alteration of its length, from the effects of heat and cold, which very ſenſibly expand and contract all metalline bodies, as is evident from the pyrometer. See *Pyrometer*.

When pendulums were firſt applied to clocks, they were made very ſhort; and the arches of the circle being large, the time of vibration, through different arches, could not in that caſe be equal; to effect which, the pendulum was contrived to vibrate in the arch of a cycloid.

In all that has been hitherto ſaid, the power of gravity has been ſuppoſed conſtantly the ſame. But, if the ſaid power varies, the lengths of pendlums muſt vary in the ſame proportion, in order that they may vibrate in equal times. See *Vibration*.

* PENELOPE, in fabulous hiſtory, the daughter of Icarus, married Ulyſſes, by whom ſhe had Telemachus. During the abſence of Ulyſſes, when he was at the ſiege of Troy, and who was 20 years from his dominions, ſeveral princes, charmed with Penelope's beauty, aſſuring her that Ulyſſes was dead, offered to marry her, and preſſed her to declare in their favour. She promiſed them, if they would give her time to finiſh a piece of tapeſtry ſhe was weaving, but at the ſame time undid in the night what ſhe had done in the day, and by this ingenious artifice, eluded the importunity of thoſe who ſought her in marriage till Ulyſſes's return.

PENETRATION, the art whereby one thing takes the place of another, or has its extenſion in the ſame part of ſpace before poſſeſſed by the other.

PENGUIN, in ornithology, the name of a ſea-bird common on the coaſts of America, eſpecially about the banks of Newfoundland, and the iſlands about the Streights of Magellan. It has eight furrows on the beak, and white ſpots before the eye; it is a very ſingular bird, and about the ſize of a gooſe.

PENIS, the YARD, in anatomy, the primary organ of generation in man; being called alſo mentula, virga, priapus, and by a multitude of other names.

Anatomiſts divide the penis into three parts the body, the glans, and the urethra. In the body of the penis, are obſervable the cuticle and cutis, as the common integuments; the prepuce, being a reduplication of the cutis covering the glans;

and in the lower of this is fixed the frænulum, all which are deſcribed under their ſeveral heads.

After theſe is obſervable the proper teguments or coats of the penis. This is a robuſt coat, of a membranous nature, ſurrounding every part of the penis. It is ſometimes double, and has in the interſtitial ſpace a celluloſe coat, which is diſcoverable by inflation and drying in that ſtate. Under this are the two bodies which conſtitute the penis; theſe, being called the corpora cavernoſa, or ſpongioſa, are deſcribed under the article *Cavernoſe*.

PENITENCE, the ſame with repentance; but is alſo uſed for the diſcipline or puniſhment, uſually called penance.

PENITENTS, an appellation given to certain fraternities of penitents diſtinguiſhed by the different ſhape and colour of their habits.

* PENN, William, an eminent writer among the Quakers, and the planter and legiſlator of Pennſylvania, was born at London, the 14th of October, 1644. In 1660, he was entered a gentleman commoner of Chriſt-church, in Oxford, where having before received an impreſſion from the preaching of one Thomas Loe, a quaker, withdrew, with ſome other ſtudents, from the national worſhip, and held private meetings, for prayer and preaching. This gave great offence to the heads of the colleges, and Mr. Penn, though but 16 years of age, was fined for nonconformity, and, ſtill continuing his religious exerciſes, was at length expelled his college. Upon his return home, he was, for the ſame reaſon, treated with great ſeverity by his father, who at laſt turned him out of doors; but his reſentment abating, he ſent him to France with ſome perſons of quality, where he continued a conſiderable time, and returned not only well ſkilled in the French language, but a polite and accompliſhed gentleman. About the year 1666, his father committed to his care a conſiderable eſtate in Ireland; but being found in one of the quakers meetings in Cork, he, with many others, was thrown into priſon, but, on his writing to the earl of Orrery, was ſoon diſcharged. However, his father being informed of this, ſent for him to England, and finding him inflexible to all his arguments, turned him out of doors a ſecond time. About 1688, he became a public preacher among the quakers, and that year was committed cloſe priſoner to the Tower, where he wrote ſeveral treatiſes, and being diſcharged after ſeven months impriſonment, went to Ireland, where he alſo preached amongſt the quakers. Returning to England, he was, in 1670, committed to Newgate for preaching in Gracechurch-ſtreet meeting-houſe, London, but being tried at the ſeſſions-houſe in the Old Bailey, he was acquitted. On the 16th of September, the ſame year, his father, who was then perfectly reconciled to him, died, and left him a plentiful fortune; but his perſecutions were not yet at an end; for, the 5th of February, 1671, he was committed to Newgate, for preaching at a meeting in Wheeler-ſtreet, London, and during his impriſonment, which laſted ſix months, he wrote ſeveral treatiſes. After his diſcharge, he went into Holland and Germany; and in 1672, married and ſettled with his family, at Rickmanſworth, in Hertfordſhire. The ſame year he publiſhed ſeveral pieces, and particularly one againſt Reeve and Muggleton. In 1677, he again travelled into Holland and Germany, to propagate his opinions. In 1681, Charles II. in conſideration of the ſeveral debts due from the crown to Mr. Penn's family; granted him and his heirs the province lying on the weſt ſide of the river Delaware, in North America, which from thence obtained the name of Penſylvania, upon which Mr. Penn publiſhed a brief account of that province, with the king's patent, and propoſing an eaſy purchaſe of lands, and good terms of ſettlement for ſuch as were inclined to remove thither; many went over, when he appointed commiſſioners to purchaſe the land he had received from the king of the native Indians, and concluded a peace with them. The city of Philadelphia was planned and built; and he himſelf drew up the fundamental conſtitutions of Pennſylvania in 24 articles. In 1681, he was elected a member of the Royal Society; and the next year, embarked for Pennſylvania, where he continued about two years, and then returned to England. Upon the acceſſion of king James to the throne, he was taken into great favour with his majeſty, which expoſed him to the imputation of being a papiſt; and Dr. Tillotſon among others, having entertained a ſuſpicion of him, Mr. Penn fully vindicated himſelf; however, upon the revolution, he was examined before the council, in December 1668, and obliged to give ſecu-

rity on the firſt day of term, which was afterwards continued. He was ſeveral times diſcharged and examined; and at length warrants being iſſued out againſt him, he was obliged to conceal himſelf for two or three years; however, being at laſt permitted to appear before the king and council, he repreſented his innocence ſo effectually that he was acquitted. In 1699, he, with his wife and family, embarked for Pennſylvania, whence he returned in 1701, in order to vindicate his proprietary right, which was attacked during his abſence. Upon queen Anne's acceſſion to the crown, he was in great favour with her; but, in 1707, he was involved in a law-ſuit with the executors of a perſon who had been formerly his ſteward; but though he was generally thought to be aggrieved, the court of Chancery did not think proper to relieve him, in conſequence of which, he was obliged to live within the rules of the Fleet for ſeveral months, till the matter in diſpute was accommodated. He died, at his ſeat, at Twyford, in Buckinghamſhire, the 30th of July, 1718, in the 74th year of his age. Mr. Penn's generous and pacific ſpirit, joined to his great abilities, deſervedly procured him reſpect from the moſt diſtinguiſhed perſons, and made him univerſally beloved.

PENNY, in commerce, an ancient Engliſh coin, which is now generally a money of account.

It was equal in weight to our threepence; five of which made a Saxon ſcilling, and thirty a mark, or mancuſe, equal to our ſeven ſhillings and ſixpence.

Till the time of Edward I. the penny was ſtruck with a croſs, ſo deeply indented, that it might be eaſily broke into two, thence called half pennies, or into four, called four things, or farthings: but that prince coined it without indenture, and ſtruck round the halfpence and farthings. He alſo ordered that the penny ſhould weigh thirty-two grains of wheat, and called it the penny ſterling, twenty of which were to weigh an ounce.

At preſent a penny, bating a few ſilver pence current among us, is only a money of account, containing the twelfth part of our ſhilling, or the two hundred and fortieth part of a pound.

PENNY-WEIGHT, a Troy weight, containing twenty-four grains, each equal in weight to a grain of wheat, gathered out of the middle of the ear, and well dried.

* PENSYLVANIA, one of the Engliſh plantations in North America, between thirty-nine and forty-two degrees of north latitude, and is bounded by the five nations of Iroquois on the north, by New Jerſey and New York on the eaſt, and by Maryland on the ſouth and weſt, being two hundred miles in length, and almoſt as much in breadth. It is well watered by the river Delawar and other navigable rivers, which bring large ſhips up into the heart of the province. The produce of this country is corn, cattle, timber, pot-aſhes, wax, ſkins, and furrs; and they carry to the Caribbee iſlands ſalted beef, pork, horſes, pipe-ſtaves, and fiſh, taking in return, ſugar, rum, and molaſſes. From England they have cloathing, furniture, hard-ware, and all ſorts of tools. The principal inhabitants are quakers.

PENSION, a ſum of money paid annually for ſervices, or conſiderations already paſt.

PENSIONARY, or PENSIONER, one who has an appointment, or yearly ſum, payable during life, by way of acknowledgment, charged on the eſtate of a prince, company, or particular perſon.

Grand PENSIONARY, an appellation given to the firſt miniſter of the ſtates of Holland.

PENSIONARY, the firſt miniſter of the regency of each city in Holland.

PENSIONER, a perſon who receives a penſion, yearly ſalary, or allowance.

PENTAGON, in geometry, a figure of five ſides and five angles.

If the five ſides be equal, and alſo the angles, the figure is called a regular pentagon, as plate xli. fig. 7.

The moſt conſiderable property of a regular pentagon is, that one of its ſides D E is equal in power to the ſides of a hexagon, and a decagon, inſcribed in the ſame circle A B C D E; that is, the ſquare of the ſide D E, is equal to the ſum of the ſquares of the ſides D *a* and D *b*.

Pappus has alſo demonſtrated, that twelve regular pentagons contained more than twenty equilateral triangles inſcribed in the ſame circle, *lib.* 5. *probl.* 45.

The dodecahedron, which is the fourth regular ſolid, conſiſts of twelve pentagons.

PENTAGRAPH, or PARALLELOGRAM, an inſtrument whereby deſigns of any kind may be copied in what proportion you pleaſe, without being ſkilled in drawing.

PENTAMETER, in ancient poetry, a kind of verſe conſiſting of five feet, or metres; whence the name. The two firſt feet may be either dactyls or ſpondees, at pleaſure; the third is always a ſpondee, and the two laſt anapeſts.

PENTANDRIA, in botany, one of Linnæus's claſſes of plants, the fifth in order; the characters of which are, that all the plants comprehended in it have hermaphrodite flowers, with five ſtamina or male parts in each: they are ſubdivided into orders, which are denominated *monogynia*, *digynia*, *trigynia*, *&c.* according as there are one, two, three, &c. piſtils, or female parts, in each flower. See *Stamina.*

To this genus belongs the vine, of the order of the *monogynia*; the elm, of the *digynia*; ſumach, of the *trigynia*, &c.

PENTAPETALOUS, an appellation given to flowers that conſiſt of five petals of leaves,

PENTATEUCH, ϖεντατευχος, an appellation given to the firſt five books of the Old Teſtament, viz. Geneſis, Exodus, Leviticus, Numbers, and Deuteronomy.

The Samaritans acknowledge no other criptures beſides the Pentatench, which they ſtill preſerve in the old Hebrew or Phœnician character, as alſo in the vulgar Samaritan.

PENTECOST, a ſolemn feſtival of the Jews, ſo called becauſe it was celebrated on the fiftieth day after the ſixteenth of the month Niſan, which was the ſecond day of the paſſover.

The feaſt of Pentecoſt was inſtituted in memory of the law's being given on the fiftieth day after the Iſraelites came out of Egypt.

It was on the feaſt of Pentecoſt that the Holy Ghoſt miraculouſly deſcended on the apoſtles.

PENUMBRA, in aſtronomy, a partial ſhade obſerved between the perfect ſhadow and the full light in an eclipſe. It ariſes from the magnitude of the ſun's body; for were he only a luminous point, the ſhadow would be all perfect; but by reaſon of the diameter of the ſun, it happens that a place which is not illuminated by the whole body of the ſun, does yet receive rays from a part thereof.

PEPPER, *Piper* in natural hiſtory, an aromatic fruit or berry, of a hot dry quality, growing in Sumatra, Java, and Malabar. The pepper-corns adhere in cluſters to the ſtalks, with pedicles: when ripe, they are firm, not juicy, of a red colour, which changes in drying to a black.

We have three kinds of pepper at this time in uſe in the ſhops; namely, the black, the white, and the long pepper.

Common or Black PEPPER, the fruit gathered, probably, before perfect maturity, and dried in the ſun.

White PEPPER, the ripe fruit decorticated by maceration in water. Some of the grains, as brought to us, have pieces of a dark coloured ſkin ſtill upon them.

Of theſe pungent hot ſpices, the black ſort is the hotteſt and ſtrongeſt, and moſt commonly made uſe of for medicinal as well as culinary purpoſes. They both ſeem to heat the conſtitution more than ſome other ſpices that are of equal pungency upon the palate; and from thoſe ſpices they differ in this, that their pungency does not reſide in the volatile parts or eſſential oil, but in a ſubſtance of a more fixed kind, which does not riſe in the heat of boiling water. Pepper, infuſed in water, impregnates the menſtruum pretty ſtrongly with its flavour, but weakly with its taſte; by boiling for ſome time, a little more of its pungent matter is extracted, and its flavour diſſipated.

Long PEPPER, the fruit of an Eaſt Indian plant of the ſame genus with that which produces the black pepper; of a cylindrical figure, about an inch and a half in length, having numerous minute grains diſpoſed round it in a kind of ſpiral direction. This ſpice is hotter and more pungent than either of the preceding kinds, and its ſpirituous extract is proportionably more fiery.

Jamaica PEPPER, See *Pimento.*

PERAMBULATION, in law, the walking about a foreſt, pariſh, or the like, by juſtices, or others, in order to mark down and preſerve the limits and bounds thereof.

PERAMBULATIONE FACIENDA, a writ commanding the ſheriff to make perambulation, in order to ſettle the bounds of two adjoining manors.

PERAMBULATOR, in ſurveying, an inſtrument for meaſuring diſtances, called alſo pedometer, way-wiſer, and ſurveying wheel.

Its proper office is in the ſurveying of roads and large diſtances, where a great deal of expedition, and not much accuracy, is required.

Its advantages are its handineſs and expedition;

pedition; its contrivance is ſuch, that it may be fitted to the wheel of a coach, in which ſtate it performs its office, and meaſures the road without any trouble at all.

PER ARSIN ET THESIN, in muſic. Per arſin, in a ſong, counterpoint, fugue, &c. is when the notes aſcend from grave to acute; and per theſin, when they deſcend from acute to grave.

PERCEPTION, in logic, the firſt and moſt ſimple act of the mind, whereby it perceives or is conſcious of its ideas. See *Idea*.

In bare perception, the mind is in general only paſſive; yet impreſſions made on the ſenſes cauſe no perception, unleſs they are taken notice of by the mind, as we ſee in thoſe who are intently buſied in the contemplation of certain objects. It ought alſo to be obſerved, that the ideas we receive by perception are often altered by the judgment, without our taking notice of it: ſo that we take that for the perception of our ſenſes, which is but an idea formed by the judgment: thus, a man who reads, or hears, without attention, takes little notice of the characters or ſounds, but of the ideas excited in him by them. See *Judgment*.

The faculty of perception ſeems to be that which conſtitutes the diſtinction between the animal kingdom and the inferior parts of nature. Perception is alſo the firſt ſtep towards knowledge, and the inlet of all the materials of it; ſo that the fewer ſenſes a man has, and the duller the impreſſions that are made by them are, the more remote he is from that knowledge which is to be found in other men.

PERCH, or PEARCH, *Pica*, the name of a fiſh diſtinguiſhed by ſeveral tranſverſe ſtreaks, and by having the belly-fins red: it grows in ſome places to a foot and an half in length, and is conſiderably thick in proportion; but its more uſual ſize is eight or nine inches n length: its noſtrils are large and patulous, and nearer the eyes than the extremity of the ſnout.

PERCH, a meaſure of length. See *Meaſure*.

PERCUSSION, the act of ſtriking See *Motion*

Center of PERCUSSION *of a Body or Figure in Motion*, is that point in which all the forces of the ſame are conſidered as united together in one; ſo that if the ſaid figure meets any obſtacle contrary to the motion thereof, it ſtrikes the obſtacle with a greater force than any other point of the figure; and conſequently, if the percutient body revolves round a fixed point, and in its motion ſtrikes any obſtacle with its center of percuſſion, it will, during a ſmall particle of time, preſerve an equilibrium about that point.

PERENNIAL, in botany, is applied to thoſe plants whoſe roots will abide many years, whether they retain their leaves in winter or not; thoſe which retain their leaves are called ever-greens; but ſuch as caſt their leaves are called deciduous, or pedifols. Some of theſe have annual ſtalks, which die to the root every autumn, and ſhoot up again in the ſpring; to which Jungius gives the title of radix reſtibilis.

PERFECT, ſomething to which nothing is wanting; or that has all the requiſites of its nature and kind.

PERFECTION, the ſtate or quality of a thing perfect.

PERFUME, *Suffitus*, an agreeable artificial odour, affecting the organ of ſmelling. The generality of perfumes are made up of muſk, ambergriſe, civet, roſe and cedar-woods, orange-flowers, jeſmin, jonquils, tuberoſes, and other odoriferous flowers: thoſe drugs commonly called aromatics, ſuch as ſtorax, frankincenſe, benzoin, cloves, mace, &c. enter the compoſition of a perfume: ſome are alſo compoſed of aromatic herbs or leaves, as lavender, marjoram, ſage, thyme, hyſſop, &c.

PERIANTHIUM, in botany, expreſſes that ſort of cup of a flower which either conſiſts of ſeveral leaves, or elſe of one leaf divided into ſeveral ſegments, and ſurrounds the lower part of the flower.

PERICARDIUM, in anatomy, a mambranaceous bag, looſely including the heart, and ſituated in the middle and lower part of the thorax, between the two lobes of the lungs.

The uſes of the pericardium are, 1. To ſupport the heart in a pendulous ſtate, eſpecially when we lie down. 2. To defend the heart from the cold air taken in at the lungs. 3. To preſerve it from being injured by water, by matter, or any other extraneous fluid in the cavity of the thorax: and, 4. To contain the liquor of the pericardium, as it is called, which ſerves to facilitate the motions of the heart.

* PERICLYMINUS, in fabulous hiſtory, the ſon of Neleus, and the brother of Neſtor, was inſtructed by Neptune

tune to aſſume any form he pleaſed. But on his fighting with Hercules, he varied his ſhape in vain, and being conquered in the form of various beaſts, aſſumed that of the eagle, and cuffing the heroe's cheeks with his wings, and tearing his face with his beak, he then ſoared aloft, when Hercules bending his bow, ſhot him with an arrow, and killed him.

PERICARPIUM, among botaniſts, a covering or caſe for the ſeeds of plants. It is the germen of the piſtil enlarged.

PERICRANIUM, in anatomy, a thick ſolid coat, or membrane, covering the outſide of the cranium, or ſkull. Some call it by the name of perioſteum, becauſe of its adhering to the bone; others divide it into two membranes, the under one of which immediately inveſting the ſkull they call perioſteum, and the upper pericranium. In effect, it is one double membrane, conſiſting, as moſt others do, of two coats. It is ſuppoſed to have its origin from the dura mater, which paſſing through the ſutures of the ſkull, by means of ſeveral filaments, forms this thick membrane; at leaſt it is found connected to the dura mater, by fibres tranſmitted from it to the membrane through the ſutures. About the origin of the temporal muſcles, the coats of the pericranium part; the outer paſſing over thoſe muſcles, and the inner ſtill adhering cloſe to the cranium. See *Perioſteum*.

PERIGÆUM, *Perigee*, in aſtronomy, that point of the ſun's or moon's orbit, wherein they are at their leaſt diſtance from the earth; in which ſenſe it ſtands oppoſed to apogee. See *Apogee*.

PERIHELIUM, in aſtronomy, that point of a planet or comet's orbit wherein it is in its leaſt diſtance from the ſun; in which ſenſe it ſtands in oppoſition to aphelium.

PERIMETER, in geometry, the bounds or limits of any figure or body.

The perimeter of ſurfaces or figures are lines, thoſe of bodies are ſurfaces. In circular figures, inſtead of perimeter, we ſay circumference, or periphery.

PERINÆUM, or PERINEUM, in anatomy, the ſpace between the anus and the parts of generation, divided into two equilateral diviſions, by a very diſtinct line, which is longer in males than females. The perinæum is ſubject to laceration in a difficult birth. In this part an operation is performed, called a puncture of the perinæum, or perforation made into the urethra and bladder, to diſcharge the urine when it is ſuppreſſed. See *Delivery*.

PERIOD, in aſtronomy, the time taken up by a ſtar or planet in making a revolution round the ſun; or the duration of its courſe till it returns to the ſame point of its orbit.

The periodical times of the planets round the ſun are as follow:

The period of	days.	hours.	min.	ſeconds
Mercury	87	23	15	53
Venus	224	16	49	24
The earth	365	6	9	14
Mars	686	23	27	30
Jupiter	4332	12	20	25
Saturn	10759	6	36	26

See *Mercury*, *Venus*, &c.

There is a wonderful harmony between the diſtances of the planets from the ſun, and their periods round him; the great law whereof is, that the ſquares of the periodical times of the primary planets are to each other as the cubes of their diſtances from the ſun; and likewiſe, the ſquares of the periodical times of the ſecondaries of any planet, are to each other as their cubes of their diſtances from that primary. This harmony among the planets is one of the greateſt confirmations of the Copernican hypotheſis.

PERIOD, in chronology, a revolution of a certain number of years, or a ſeries of years whereby time is meaſured: ſuch are the following.

Calippic PERIOD, a ſyſtem of ſeventy-ſix years.

The Calippic period comprehends 48 common years, and 28 intercalary ones, 940 lunations, and 22759 days. See the article *Cycle*.

Dionyſian PERIOD, or *Victorian* PERIOD, a ſyſtem of 532 lunæ ſolar and Julian years, which being elapſed, the characters of the moon fall again upon the ſame day and feria, and revolve in the ſame order, according to the opinion of the ancients.

This period is otherwiſe called the great paſchal cycle, becauſe the Chriſtian church firſt uſed it, to find the true time of the paſcha, or Eaſter. The ſum of theſe years ariſe by multiplying together the cycles of the ſun and moon.

Hipparchus's PERIOD, a ſyſtem of 304 years, both lunar and ſolar, which being elapſed, Hipparchus thought that the reckoning by the lunar motion would coincide again with the ſolar meaſures.

This period comprehends 3760 lunar months, or 111039 days; the ſum of which ariſes from the multiplication of the Calippic period by 4, ſubtracting unity from the product.

Metonic PERIOD, that invented by Meton, being the ſame with the cycle of the moon.

PERIOD, in grammar, a ſmall compaſs of diſcourſe, containing a perfect ſentence, and diſtinguiſhed at the end by a point, or full ſtop, thus (.); and its members or diviſions marked by commas, colons, &c.

PERIOD is alſo uſed for the character (.) wherewith the periods of a diſcourſe are terminated, or expreſſed, being commonly called a full ſtop, or point. See *Punctuation.*

PERIOD, in numbers, a diſtinction made by a point, or comma, after every ſixth place or figure; and is uſed in numeration for the readier diſtinguiſhing and naming the ſeveral figures or places.

PERIOD *of a Diſeaſe*, in medicine, the time between the acceſs of one fit, or paroxyſm, and that of the next, including the entire exacerbation, decline, and intermiſſion, or remiſſion.

PERIODIC, or PERIODICAL, ſomething that terminates and comprehends a period; ſuch as a periodic month, being the ſpace of time wherein the moon diſpatches her period.

PERIOECI, περιοικοι, in geography, ſuch inhabitants of the earth as have the ſame latitudes, but oppoſite longitudes; or live under the ſame parallel, and the ſame meridian, but in different ſemicircles of that meridian, or in oppoſite points of the parallel. Theſe have the ſame common ſeaſons throughout the year, and the ſame phænomena of the heavenly bodies; but when it is noonday with the one, it is midnight with the other, there being twelve hours between them in an eaſt or weſt direction. Theſe are found on the globe, by the hour index, or by turning the globe half round, that is 180 degrees either way.

PERIOSTEUM, or PERIOSTIUM, in anatomy, a nervous vaſculous membrane, endued with a very quick ſenſe, immediately ſurrounding, in every part, both the internal and external ſurfaces of all the bones in the body, excepting only ſo much of the teeth as ſtand above the gums, and the peculiar places on the bones in which the muſcles are inſerted. It is hence divided into the external and internal perioſteum, and where it externally ſurrounds the bones of the ſkull, it is generally called the pericranium.

This membrane ſerves to conſtitute the firſt rudiments of the bones in a fœtus in utero. It is the organ of ſecretion for the bony matter, as the membrana adipoſa is for the fat; all the bones, during the time of their growth, receiving from it their matter of accretion, and afterwards their nutriment. The blood-veſſels of the perioſteum penetrate in innumerable places into the bones themſelves, as is evidently ſeen in the freſh bones of children. The ſenſibility in the bones is wholly owing to this membrane; for when diveſted of this, they may be ſawed, cut, or burnt without pain. It gives the determination and figure to bones, as is evident from this, that when it is wounded, exoſtoſes, tophi, and caries ariſe in the part. The perioſteum is of different thickneſs in different parts, but in general the internal is vaſtly thinner than the external, and ſerves to nouriſh that part of the bones. It receives alſo nerves and blood-veſſels from the outſide, through certain canals in the ſubſtance of the bones, which it communicates to the marrow in ſuch as have any. It is generally ſaid to ariſe from the dura mater of the brain; but Heiſter thinks this opinion ſcarce right, as the perioſteum is evidently formed at the ſame time with the dura mater in the fœtus.

PERIPATETIC PHILOSOPHY, that ſyſtem taught and eſtabliſhed by Ariſtotle, and maintained by his followers, the Peripatetics, called alſo Ariſtotelians.

Ariſtotle's philoſophy preſerved itſelf *in puris naturalibus*, a long time, none of his followers or commentators having dared to make any innovation therein, till the beginning of the thirteenth century, when it began to be new modelled. A reformed ſyſtem of Peripateticiſm was firſt introduced into the ſchools in the univerſity of Paris, from whence it ſoon ſpread throughout Europe, and has ſubſiſted in the univerſities to this day, under the name of ſchool philoſophy; the foundation whereof is Ariſtotle's doctrine frequently miſunderſtood, and oftener miſapplied: but of theſe, at different times, have ſprung ſeveral branches, as the Thomiſts, Scotiſts, Nominaliſts, &c.

PERIPHERY, in geometry, the circumference of a circle, ellipſis, or any other regular curvilinear figure.

PERIPHRASIS, in rhetoric, the ſame with circumlocution.

PERIPNEUMONY, in medicine, an inflammation of the lungs, attended with a weight on the lungs, a difficulty of breathing, and an oppreſſion of the breaſt, with a purulent ſpitting, and a fever accompanied with a cough. When the inflammation affects both the lobes, and the whole body of the lungs, the caſe is deſperate. The peripneumony is diſtinguiſhed into two kinds; one of which has its ſeat at the extremity of the pulmonary artery, and is called the true peripneumony; and the other is ſituated in the bronchial arteries, and is called the ſpurious or baſtard peripneumony. The true peripnemony is often cured by a critical reſolution and concoction of the morbific matter, which is either attenuated, ſo as to be returned into the channels in the common courſe of circulation, or expectorated by coughing; which may be eaſily known by an abatement of the ſymptoms, and the patient's falling into gentle breathing ſweats. Copious bleeding is the moſt effectual remedy in the beginning of this diſeaſe; but not ſo proper when expectoration goes on ſucceſsfully, becauſe it ſometimes ſuppreſſes it, and in that caſe ſudorifics thicken the matter which is expectorated. The motions of nature ought to be followed: the aliment ought to be more ſlender and thin than in any other inflammatory diſeaſe whatſoever; common whey is ſufficient to preſerve the ſtrength of the patient; relaxing aliments are proper, of which barley, and all its preparations, are the beſt. Diuretics that have not much acrimony are uſeful: and for this intention, an infuſion of fennel-roots in warm water, with milk, is good. If nature relieves by a diarrhœa, without ſinking the ſtrength of the patient, it ought to be promoted by emollient clyſters. But if the patient is neither relieved nor dies in eight days, the inflammation will end in a ſuppuration, and an abſceſs of the lungs, and ſometimes in ſome other part of the body: in this caſe bleeding muſt be forborne; the diet muſt be mild, ſoft, incraſſating, and more plentiful; and tepid vapours ſhould be taken into the lungs, from decoctions of proper ingredients. When, by the ſymptoms and time, the impoſthume may be judged to be ripe, the vapour of vinegar, and any thing that creates a cough, are proper; for the ſooner it is broke, the leſs danger will the lungs be in. In the ſtate which is not abſolutely deſperate, the aliment ought to be milk, and the drink milk and barley-water, with gentle anodynes, that the patient may have ſome reſt.

Spurious, or *Baſtard* PERIPNEUMONY, a diſeaſe of the lungs, which generally ariſes from a heavy pituitous matter generated in the blood, and caſt upon the lungs. In this diſorder the patient is hot and cold by turns, is giddy upon the leaſt motion, and complains of a rending pain of the head whenever he coughs; he vomits up every thing that he drinks; the urine is turbid and red, and the whole thorax full of pain. In this diſorder the patient ſhould be let blood from a large orifice; and then give him the following clyſter, which muſt be repeated daily, till the ſymptoms evince that the lungs are relieved. Take of honey, three ounces; of nitre, one dram; one yolk of an egg; and eight ounces of barley-water; make them into a clyſter. Let the patient's diet be very ſlender, ſuch as weak broths, ſharpened a little with orange or lemon juice; and he may drink a weak mixture of honey and water; the ſteams of warm water may be taken in at the mouth, and the following decoction given him: Take of the roots of fennel, two ounces; of the roots of graſs, four ounces; of the leaves of pellitory, and agrimony, each an handful and a half; of the bruiſed ſeeds of white poppy, one ounce; and of liquorice, one ounce and a half; boil them, for a quarter of an hour, in two pints and an half of water; of which let the patient drink two ounces every two hours. Likewiſe let his legs and feet be bathed, and large bliſters applied.

PERISCII, in geography, the inhabitants of either frigid zone, between the polar circles and the poles; where the ſun, when in the ſummer-ſigns, moves only round about them, without ſetting, and conſequently their ſhadows, in the ſame day, turn to all the points of the horizon.

PERISTALTIC, in medicine, a vermicular ſpontaneous motion of the inteſtines, performed by the contraction of the circular and longitudinal fibres, of which the fleſhy coats of the inteſtines is compoſed; by means whereof the chyle is driven into the orifices of the lacteal veins, and the fæces are protruded towards the anus. When this motion comes to be depraved, and its direction changed, ſo as to proceed from below upwards, it produces what is called the iliac paſſion.

PERISTYLE, in ancient architecture, a building encompaſſed with a row of columns on the inſide: ſuch was the hypæthre temple of Vitruvius, and ſuch are now ſome baſilicas in Rome, ſeveral palaces in Italy, and moſt cloiſters of religious. Periſtyle is alſo uſed by modern writers, for a range of columns, either within or without a building: thus we ſay, the Corinthian periſtyle of the portal of the Louvre, &c.

PERITONÆUM, in anatomy, a thin, ſmooth, and lubricous membrane, inveſting the wole internal ſurface of the abdomen, and containing moſt of the viſcera of that part, as it were in a bag. It lies immediately under the tranſverſe muſcles of the abdomen, and adheres to them, and alſo coheres with the diaphragm, and with all the viſcera lodged in this part. It entirely encloſes the ſtomach, the inteſtines, the meſentery, the omentum, the liver, the ſpleen, and the pancreas: as to the kidneys, ureters, and ſmaller veſſels of the abdomen, it covers them only on the anterior part, and the urinary bladder only on the poſterior. The peritonæum is compoſed of a double membrane, or lamella; the exterior one has longitudinal and ſlender fibres, and the interior tranſverſe and more robuſt ones. There are alſo ligaments formed from it, viz. that which ſuſpends the liver, and the two ligementa lata of the uterus in women. Its proceſſes, ſent out of the abdomen, are two, and theſe ſerve to ſurround and incloſe the ſpermatic veſſels and the teſticles. The arteries and veins of the peritonæum are ſupplied from the epigaſtric, mammary, lumbar, and diaphragmatic veſſels; and the nerves are propagated from thoſe of the diaphragm, back, loins, and os ſacrum. The uſes of the peritonæum are, 1. To incloſe the contents of the abdomen; for when this part is dilated, rounded, or broken, they fall out of their due places; and ruptures are formed. 2. To give an external covering to almoſt all the parts contained in the abdomen, which are threfore generally ſaid to have their external membrane from the peritonæum, And 3. To form the proceſs of the peritonæum, and the tunica vaginalis of the teſtes.

PERITROCHIUM, in mechanics, a wheel, or circle, concentric with the baſe of a cylinder, and moveable together with it, about an axis. See *Axis*.

PERJURY, in law, a crime of ſwearing falſely, where a lawful oath is adminiſtered by one properly authoriſed, in a matter relating to the iſſue or cauſe in queſtion, whether it be a perſon's own wilful act, or done by the ſubornation of others.

In order to make an offence perjury, it muſt appear to be wilful and deliberate, and not done through ſurpriſe or inadvertency: it muſt be direct and poſitive, and not where a perſon ſwears as he thinks or believes: but in caſe a perſon ſwears to what he is ignorant of, it is a falſe oath, even though it ſhould happen to be true; thus, a plaintiff cauſed two perſons to ſwear to the value of goods, which they never ſaw, when, notwithſtanding they ſwore what was true, it was adjudged to be perjury in them. At the common law, perjury, and the ſubornation of it, are puniſhed by fine, impriſonment, pillory, tranſportation, &c.

PERMANENT, ſomething that continues the ſame, whether in nature or ſituation, and other circumſtances: thus air, generated by fermentation, is ſaid to be permanent, becauſe it continues to ſhew all the natural properties of common air.

Thus alſo thoſe cups of flowers are called permanent, which remain after the flower-leaves are fallen.

PERNIO, in ſurgery, a chilblain or kibe, generally produced in the hands and feet by violent cold. Chilblains are accompanied with inflammation, heat, redneſs, pricking, and pain, of that limb; ſometimes they are of a livid or leaden colour, and ſometimes they break out with ſcabs, or elſe with chops, or ſlits, which afterwards penetrate deeper, and become ulcerous. The humour which they diſcharge is a little fœtid, and nearly reſembles pus or ſanies; and they terminate in either diſperſion, ſuppuration, or gangrene and ſphacelus. While the chilblains are tumified and red, and the part retains its ſenſe and motion, without any great heat and pain, the diſorder is then of the mildeſt kind; on the contrary, when they are livid, occaſion the limb to become ſtiff and inſenſible, or excite pricking pains therein, there is then danger of a worſe conſequence, leſt it ſhould degenerate into a gangrene, or at leaſt a deep exulceration. There being no room to doubt but that cold is the cauſe of chilblains, it readily follows, that the cure muſt conſiſt chiefly in reſtoring the blood to its former fluidity and free circulation as ſoon as poſſible; for which purpoſe an external as well as internal treatment is neceſſary. In the external treatment, the patient being expoſed in a temperate air, ſhould, according to Heiſter, exerciſe his limbs as much as poſſible, in order to advance him ſtill to a greater warmth or heat; but when he is too weak to exerciſe himſelf, it will be proper to bathe the parts affected with ſnow, or cold water; after which, when the limb becomes ſenſible, comfortable medicines may be applied, ſuch as ſpirit of wine, either pure, or with theriaca, rock-oil, balſam of ſulphur, &c. When the parts affected have been well rubbed or bathed with theſe, the patient may then be advanced towards the fire, or be put to bed, endeavouring afterwards to excite a gentle ſweat. In the internal treatment, great ſervice will be had from a few glaſſes of hot wine, wherein has been boiled ſome cinnamon and ſugar; though it may not be improper to give with this alternately, a ſmall quantity of ſome ſudorific mixture. If the wine be not to be procured, good ale boiled with cinnamon, cloves, and ſugar, may ſupply its place. It ſhould be continued ſo as to keep up a ſweat for a whole hour, for half an hour, or according to the ſeveral circumſtances: but if the diſorder is much ſlighter, this method is not ſo neceſſary; it may then be laid aſide; though, in the opinion of Heiſter, it is much preferable to any other method. When chilblains tend to a ſuppuration, then it is proper to treat them like other abſceſſes.

If a patient has before been troubled with chilblains, which are uſed to return every year in the winter, the preſervative againſt the diſorder is to anoint the parts affected with petroleum, or oil of turpentine, before and after the ſeverity of the winter comes on; but when the diſorder has begun to ſhew itſelf again by tumour, inflammation, and pain, the heel or finger may be wrapped up in a ſwine's bladder, dipped in the forementioned oil, and the cold itſelf ſhould always be carefully avoided by proper cloths or coverings.

PERPENDICULAR, in geometry, a line falling directly on another line, ſo as to make equal angles on each ſide, called alſo a normal line.

PERPENDICULAR *to a Parabola*, is a right line cutting the parabola in the point in which any other right line touches it, and is alſo itſelf perpendicular to that tangent.

PERPENDICULARITY *of Plants*, in natural hiſtory, a quality obſerved in all plants, which though they riſe a little crooked, yet the ſtems ſhoot up, and the roots ſink down as much as poſſible in a perpendicular direction.

PERPETUAL, ſomething that endures always, or for ever.

PERPETUAL MOTION, in mechanics, a motion which is ſupplied from itſelf, without the intervention of any external cauſe. This problem has given riſe to an infinite number of ſchemes, which have all proved equally abortive. What has given riſe to the belief of a perpetual motion is the following mechanical principle.

The momentums of the weight and power are as the quantities of matter in each multiplied by their reſpective celerities, and the celerities are as the diſtances from the center of motion, and alſo as the ſpaces paſſed through in a perpendicular direction in the ſame time; it muſt follow that there will be an equilibrium between the weights, when they are to each other reciprocally as the diſtances from the center, or as the celerities of the motions, or as the perpendicular aſcent or deſcent in the ſame time; and this univerſally in all mechanical powers whatever, which is therefore the fundamental principle of all mechanics.—The nature of this propoſition, not being underſtood by ſmatterers in mechanics, gave them occaſion to imagine the poſſibility of a perpetual motion from one part of it, which they did not ſee was utterly impoſſible from another part of it.

What ſeems to promiſe the poſſibility of ſuch a movement, is this, viz. that the momenta of equal bodies are as their diſtances from the center of motion. Hence, ſay the perpetual motion men, if a wheel were conſtructed of the form of that in the figure A B C D, (plate XLI. fig. 8.) with circular cells going from the inner part E F G H to the outer, containing equal balls, C D E F; then upon turning the wheel they muſt move towards the center N on one part, as the ball E; and from it on the oppoſite part, as the ball C; and by this means the ball C will have a greater momentum than the ball F, and ſo will determine the wheel to move round; and ſince this muſt be the caſe of all the balls E and C that come into the ſituation E C, the wheel muſt neceſſarily move continually, becauſe it will bring two balls into that ſituation. It is true, were there but two balls E and C, the ball C would by this contrivance move the wheel one-fourth round, viz. while it deſcended from C to D; and by this means would raiſe the ball E to F, and there they will abide in the ſituation D F; but, ſay the men of this perſuaſion, two other balls, ſucceeded to the places E and C, will ſtill keep the wheel moving. Yes, ſo they would, if the balls at D and E could be taken away the moment they come into that poſition, not elſe: for the balls C and E, in order to move the wheel, muſt move the balls D and F, which have equal momenta, as being at the ſame diſtance each from the center, as are the other two reſpectively, which is abſurd by the general propoſition.

The abſurdity of a perpetual motion will ſtill farther appear, if we conſider, that the momenta of bodies are always proportioned to the perpendicular deſcent or aſcent to or from the center of the earth. Since, therefore, in the wheel the bodies are all equal by ſuppoſition, and the perpendicular ſpaces through which they deſcend and aſcend, above and below the horizontal line or diameter A C, are equal; it follows, that an equilibrium muſt neceſſarily enſue. Thus, ſo far is this wheel from producing a perpetual motion, that it admits of none at all.

PERPETUITY, in law, is when an eſtate is intended to be ſo ſettled in law, &c. that it may not poſſibly be undone, or made void.

PERQUISITE, in law, any thing gotten by a man's own induſtry, or purchaſed with his money; in contradiſtinction to what deſcends to him from his father or other anceſtor.

PERQUISITES *of Courts*, are the profits which caſually accrue to a lord of the manor from his courts-baron, by fines for copyholds, eſcheats, heriots, amercements, &c.

PERRON, in architecture, the ſteps in the front of a building, raiſed before the doors of great houſes, and leading to the firſt ſtory, when raiſed above the level of the ground.

PERRY, a drink made of pears, in the ſame manner as cyder is made from apples. See *Cyder*.

The pears muſt be perfectly ripe, and to give the liquor a greater degree of tartneſs, ſome mix crabs with them. The beſt fruit for making perry, are ſuch as are leaſt fit for eating, as the choak-pear, boreland-pear, horſe-pear, and the Barbary-pear.

PERSECUTION, any pain or affliction which a perſon deſignedly inflicts upon another; and, in a more reſtrained ſenſe, the ſufferings of Chriſtians on account of their religion. Hiſtorians uſually reckon ten general perſecutions, the firſt of which was under the emperor Nero, thirty-one years after our Lord's aſcenſion; when that emperor having ſet fire to the city of Rome, threw the odium of that execrable action on the Chriſtians, who under that pretence were wrapped up in the ſkins of wild beaſts, and worried and devoured by dogs; others were crucified, and others burnt alive. The ſecond was under Domitian, in the year 95. In this perſecution St. John the apoſtle was ſent to the iſle of Patmos, in order to be employed in digging in the mines. The third began in the third year of Trajan, in the year 100, and was carried on with great violence for ſeveral years. The fourth was under Antoninus the philoſopher, when the Chriſtians were baniſhed from their houſes, forbidden to ſhew their heads, reproached, beaten, hurried from place to place, plundered, impriſoned, and ſtoned. The fifth began in the year 197, under the emperor Severus. The ſixth began with the reign of the emperor Maximinus, in 235. The ſeventh, which was the moſt dreadful perſecution that had ever been known in the church, began in the year 250, in the reign of the emperor Decius, when the Chriſtians were in all places driven from their habitations, ſtripped of their eſtates, tormented with racks, &c. The eighth began in the year 257, in the fourth year of the reign of the emperor Valerian. The ninth was under the emperor Aurelian, A. D. 274, but this was very inconſiderable: and the tenth began in the nineteenth year of Diocleſian, A. D. 303. In this dreadful perſecution, which laſted ten years, houſes filled with Chriſtians were ſet on fire, and whole droves were tied together with ropes, and thrown into the ſea.

PERSEVERANCE, in theology, a Chriſtian virtue, by which we are enabled to perſiſt in the way of ſalvation to the end.

PERSEUS, in aſtronomy, a conſtellation of the northern hemiſphere, which, according to the catalogues of Ptolemy and Tycho, contains twenty-nine ſtars; but in the Britannic catalogue, ſixty-ſeven.

* PERSEUS, in fabulous hiſtory, was the ſon of Jupiter and Danae. When he was grown up, he acquired great reputation by his prudence and courage; and Minerva lending him her buckler, he ſlew Meduſa, one of the Gorgons, and

cut off her head. He afterwards conquered Atlas, and married Andromeda, after he had delivered her from the ſea-monſter; but at length innocently occaſioned the death of his grandfather Achriſius; for, playing with him at the diſcus, or quoits, a game he had invented, his quoit bruiſed the old king on the foot, which turned to a mortification, of which he died. Perſeus, greatly afflicted at this accident, forſook the country of Argos, and lived at Tyrintha, in whoſe territory he built Mycene, where his poſterity is ſaid to have reigned about a hundred years. After his death, he was taken up into the heavens, where he and Andromeda form one conſtellation.

* PERSIA, a large kingdom of Aſia, conſiſting of ſeveral provinces, which, at different periods, have had their particular kings. It is bounded on the north by Little Tartary, the Caſpian Sea, Caraſm, or Coraſm, and Great Bokaria; on the ſouth by the Perſian Gulph and Sea; on the weſt by Turky in Aſia; and on the eaſt by Great Bokaria and the empire of the Great Mogul. It is about one thouſand two hundred and twenty-five miles from eaſt to weſt, and nine hundred from north to ſouth. It is divided into ſixteen large provinces, namely, Shirvan, Aran, Adirbijan, Khilan, Maſanderan, Aſterabad, Jorjan, Korazan, Irac-Agemi, Segeſtan, Candahar, Sableſtan, Khuſiſtan, Fars, Kerman, and Makran. The chief rivers, beſides the Tygris and the Amu, are the Khur, Aras, Kezil, Uſan, Hindmend, Ilmend, Bendamir, Karon, and Karka. No country bears a more different character than this; for in the north and eaſt parts, it is mountainous and cold; in the middle and ſouth-eaſt, ſandy and deſart; in the ſouth and weſt, level and extremely fertile, though for ſeveral months it is very hot. The ſoil produces all ſorts of pulſe and corn, except oats and rye. They have cotton in abundance, and, among other domeſtic animals, have camels and buffaloes; and their horſes are very numerous. In ſeveral places naptha riſes out of the ground; and they have mines of torquois-ſtones, iron, and ſalt. They have almoſt all ſorts of fruits. The Perſians are Mahometans of the ſect of Hali. The manufactures of Perſia are embroidery, eſpecially that of gold and ſilver, either in cloth, ſilk, or leather; and that which we call Turkey leather comes chiefly from hence; but ſilk ſtuffs are the chief manufacture of the country, ſuch as taffeties, tabbies, and ſilk, mixed with cotton or camels and goats hair. Their brocades, gold tiſſue, and gold velvet, are admirable; and what we call Turky carpets are in reality the product of Perſia. They alſo make ſtuffs with camels hair, goats hair, and wool.

The Armenians and Banians of India, who reſide here principally, carry on the trade to the diſtant countries, and may be looked upon as the greateſt merchants in the world By the permiſſion of the czarina, the Engliſh Ruſſia company traded through Ruſſia, down the river Wolga, and the Caſpian Sea, into Perſia, where they bartered the Engliſh woollen manufactures for Perſian ſilks, between the year 1741 and 1746; but ſome of the company's officers being about to build ſhips on the Caſpian Sea, for the uſe of the Perſians, the czarina prohibited the traffic to Perſia through her dominions, and that trade is now fallen into the hands of the Armenians. Iſpahan is the capital city.

PERSIAN-WHEEL, an engine, or wheel, turned by a rivulet, or other ſtream of water, and fitted with open boxes at its cogs, to raiſe water for the overflowing of lands, or other purpoſes.

PERSICA, the peach. See *Peach*.

PERSICARIA, in botany, a genus of arſmart plants. There is great irregularity in this genus, there being in ſome ſpecies only five ſtamina; and in others ſix, or eight. The mild or ſpotted arſmart is ſaid to be a good vulnerary and antiepileptic: and the biting arſmart is a good ſtimulating medicine, and diuretic: its freſh leaves are alſo uſed by farriers for cleanſing old ulcers.

PERSON, an individual ſubſtance of a rational or intelligent nature. Thus we ſay, an ambaſſador repreſents the the perſon of his prince; and that in law, the father and ſon are reputed the ſame perſon. In theology, the godhead is divided into three perſons; but here the word perſon is deſigned to convey a peculiar idea, very different from that attached to it every where elſe; it being only uſed for want of another term more pertinent and expreſſive.

PERSON, in dramatic poetry, the character aſſumed by an actor, or he who is repreſented by the player.

PERSON, in grammar, a term applied to ſuch nouns or pronouns, as being either prefixed or underſtood, are the nominatives in all inflexions of a verb ; or it is the agent or patient in all finite and perſonal verbs

PERSONABLE, in law, ſignifies the being able to maintain a plea in court ; eſpecially in the caſe of an alien, who may be made perſonable by act of parliament. It is alſo uſed to ſignify a capacity to receive any thing granted or given.

PERSONAL, any thing that concerns, or is reſtrained to, the perſon : thus it is a maxim in ethics, that all faults are perſonal.

PERSONAL ACTION, in law, an action levied directly and ſolely againſt the perſon ; in oppoſition to a real or mixed action.

PERSONAL GOODS, or CHATTELS, in law, any moveable thing belonging to a perſon, whether alive or dead.

PERSONAL TYTHES, tythes payable out of the profits obtained by a man's perſonal labour and induſtry, as in buying, ſelling, handicraft, &c.

PERSONAL VERB, in grammar, a verb conjugated in all the three perſons : thus called, in oppoſition to an imperſonal verb, or that which has the third perſon only.

PERSONALITY, in the ſchools, that which conſtitutes an individual a diſtinct perſon.

PERSONIFYING, or PERSONALIZING, the giving an inanimate being the figure, ſentiments, and language of a perſon.

PERSPECTIVE, the art of delineating viſible objects on a plain ſurface, ſuch as they appear at a given diſtance upon a tranſparent plane, placed perpendicular to the horizon, between the eye and the object.

The word is derived from the Latin, *perſpicio*, to ſee plainly.

Perſpective conſiſts of two parts, ſpeculative and practical.

The ſpeculative part, or theory, makes a conſiderable branch of direct optics, in regarding the appearances of all viſible objects, as they exhibit themſelves to the naked eye, and reducing thoſe appearances to mathematical rules and theorems.

The practical part is an application of theſe rules to the actual deſcription of thoſe appearances, the doing of which in a moſt eaſy and uniform manner, for all different caſes, is all that can be expected from it.

But as this part is purely mathematical, its aſſiſtance towards drawing is only what can be performed by rule and compaſs, and can therefore ſtrictly ſerve only for finding the images of points, of which they are compoſed ; and as theſe are infinite, it is endleſs to find them all by the ſtrict rules ; whence it becomes neceſſary, after a ſufficient number of them are found, to complete the image by the help of drawing, to the better effecting of which theſe points ſerve as a guide. Thus, when a circle is to be deſcribed, the practical rules ſerve to find a ſufficient number of points in the circumference ; which, being neatly joined by hand, will perfect the image, ſo that, in ſtrictneſs, nothing in this image is found by mathematical rules, ſave the few particular points ; the reſt owes its being to the hand of the drawer.

Thus alſo, if any complicated figure be propoſed, it may not be eaſy to apply the practical rules to the deſcription of every minute part, but by incloſing that figure in a regular one, properly ſubdivided and reduced into perſpective, that will ſerve as a help, whereby a perſon, ſkilled in drawing, may with eaſe deſcribe the object propoſed : upon the whole, where the boundaries of the propoſed objects conſiſt of ſtraight lines, and plain ſurfaces, they may be deſcribed directly by the rules of perſpective ; but when they are curvilinear, either in their ſides or ſurfaces, the practical rules can only ſerve for the deſcription of ſuch right-lined caſes as may conveniently incloſe the objects, and which will enable the deſigner to draw them within thoſe known bounds, with a ſufficient degree of exactneſs.

It is therefore in vain to ſeek, by the practical rules of perſpective, to deſcribe all the little hollows and prominences of objects, the different light and ſhade of their parts, or their ſmaller windings and turnings ; the infinite variety of the folds in drapery ; of the boughs and leaves of trees, or the features and limbs of men and animals ; much leſs to give them that roundneſs and ſoftneſs, that force and ſpirit, that eaſineſs and freedom of poſture, that expreſſion and grace which are requiſite to a good picture : perſpective muſt content itſelf with its peculiar province of exhibiting a kind of rough draught to ſerve as a groundwork, and to aſcertain the general proportions and places of the objects, according to their ſuppoſed ſituations, leaving the reſt to be finiſhed, beautified, and ornamented by a hand ſkilful in drawing.

It is true, perſpective is of moſt uſe where it is moſt wanted, and where a deviation from its rules would be the moſt obſervable; as in deſcribing all regular figures, pieces of architecture, and other objects of that ſort, where the particular tendency of the ſeveral lines is moſt remarkable; the rule and compaſs, in ſuch caſes, being much more exact than any deſcription made by hand: but ſtill the figure, deſcribed by the perſpective rules, will need many helps from drawing; the capitals, and other ornaments of pillars, and their entablatures, the ſtrength of light and ſhade, the apparent roundneſs and protuberance of the ſeveral parts, muſt owe their beauty and finiſhing to the deſigner's hand; but, with regard to ſuch objects as have no conſtant and certain determinate ſhape of ſize, ſuch as clouds, hills, trees, rivers, uneven grounds, and the like, there is a much larger latitude allowable, provided the general bulk, or uſual natural ſhape of thoſe objects, be in ſome meaſure obſerved, ſo as not to make them appear unnatural or monſtrous. See the article *Drawing*.

But, although the ſtrict practical rules of perſpective are in a great meaſure confined to the deſcription of right-lined figures, yet the knowledge of the general laws of that ſcience is of great and neceſſary uſe to inform the judgment, after what manner the images of any propoſed lines ſhould run, which way they ſhould tend, and where terminate; and thereby enables it the better to determine what appearance any objects ought to put on, according to their different ſituations and diſtances: it accuſtoms the eye to judge, with greater certainty, of the relations between real objects and their perſpective deſcriptions, and the hand to draw the ſame accordingly; and directs the judgment readily to diſcover any conſiderable error therein, which might otherwiſe eſcape notice. Beſides that, when the ground, or general plan, and the principal parts of a picture are firſt laid down according to the rules, every thing elſe will more naturally fall in with them, and every remarkable deviation from the juſt rules will be the more readily perceived, and the eaſier avoided or rectified; ſo that although it may be infinitely tedious, or abſolutely impracticable, to deſcribe every minute part of a picture, by the ſtrict mechanical rules; yet the employing them, where they can be the moſt commodiouſly uſed, will give the picture in general ſuch a look, as will guide the artiſt in drawing the other parts without any obvious inconſiſtency.

We ſhall now give ſuch rules as are of moſt general uſe in the practice of perſpective. 1. Let every line, which in the object, or geometrical figure, is ſtraight, perpendicular, or parallel to its baſe, be ſo alſo in its ſcenographic delineation. 2. Let the lines, which in the object return at right angles from the fore-right ſide, be drawn ſcenographically from the viſual point. 3. Let all ſtraight lines, which in the object return from the fore-right ſide, run in a ſcenographic figure into the horizontal line. 4. Let the object you intend to delineate, ſtanding on your right hand, be placed alſo on the right hand of the viſual point: and that on the left-hand, on the left-hand of the ſame point; and that which is juſt before, in the middle of it. 5. Let thoſe lines which are (in the object) equidiſtant to the returning line, be drawn in the ſcenographic figure, from that point found in the horizon. 6. In ſetting off the altitude of columns, pedeſtals, and the like, meaſure the height from the baſe-line upward, in the front or fore-right ſide; and a viſual ray down that point in the front ſhall limit the altitude of the column or pillar, all the way behind the fore-right ſide, or orthographic appearance, even to the viſual point. This rule you muſt obſerve in all figures, as well where there is a front or fore-right ſide as where there is none. 7. In delineating ovals, circles, arches, croſſes, ſpirals, and croſs-arches, or any other figure in the roof of any room, firſt draw ichnographically, and ſo with perpendiculars from the moſt eminent points thereof, carry it up unto the ceiling; from which ſeveral points, carry on the figure. 8. The center in any ſcenographic regular figure is found drawing by croſs lines from oppoſite angles; for the point where the diagonals croſs, is the center. 9, A ground-plane of ſquares is alike, both above and below the horizontal line; only the more it is diſtant above or beneath the horizon, the ſquares will be ſo much the larger or wider. 10. In drawing a perſpective figure, where many lines come together, you may, for the directing of your eye, draw the diagonals in red; the viſual lines in black; the perpendiculars in green, or other different colour, from that

that which you intend the figure ſhall be of. 11 Having conſidered the height, diſtance, and poſition of the figure, and drawn it accordingly, with ſide or angle againſt the baſe; raiſe perpendiculars from the ſeveral angles, or deſigned points, from the figure to the baſe, and transfer the length of each perpendicular, from the place where it touches the baſe, to the baſe on the ſide oppoſite to the point of diſtance; ſo will the diametrals drawn to the perpendiculars in the baſe, by interſection with the diagonals, drawn to the ſeveral transferred diſtances, give the angles of the figures, and ſo lines drawn from point to point will circumſcribe the ſcenographic figure. 12. If in a landſcape there be any ſtanding-waters, as rivers, ponds, and the like, place the horizontal line level with the fartheſt ſight or appearance of it. 13. If there be any houſe, or the like, in the picture, conſider their poſition, that you may find from what point in the horizontal lines to draw the front and ſides thereof. 14. In deſcribing things at a great diſtance, obſerve the proportion, both in magnitude and diſtance, in draught which appears from the object to the eye. 15. In colouring and ſhadowing of every thing, you muſt do the ſame in your picture, which you obſerve with your eye, eſpecially in objects lying near; but according as the diſtance grows greater and greater, ſo the colours muſt be fainter and fainter, till at laſt they loſe themſelves in a darkiſh ſky colour. 16. The catoptrics are beſt ſeen in a common looking glaſs, or other poliſhed matter; where, if the glaſs be exactly flat, the object is exactly like its original; but, if the glaſs be not flat, the reſemblance alters from the original; and that more or leſs, according as the glaſs differs from an exact plane. 17. In drawing catoptric figures, the ſurface of the glaſs is to be conſidered, upon which you mean to have the reflection: for which you muſt make a particular ichnographical draught, or projection; which on the glaſs muſt appear to be a plane full of ſquares, on which projection transfer what ſhall be drawn on a plane, divided into the ſame number of like ſquares; where though the draught may appear very confuſed, yet the reflection of it on the glaſs will be very regular, proportional, and regularly compoſed. 18. The dioptric, or broken beam, may be ſeen in a tube through a cryſtal or glaſs, which hath its ſurface cut into many others, whereby the rays of the object are broken. For to the flat of the cryſtal, or water, the rays run ſtraight; but then they break and make an angle, which alſo by the refracted beams is made and continued on the other ſide of the ſame flat. 19. When theſe faces on a cryſtal are returned towards a plane placed directly before it, they ſeparate themſelves at a good diſtance on the plane; becauſe they are all directed to various far diſtant places of the ſame. See *Reflection* and *Refraction*.

PERSPECTIVE alſo denotes a kind of painting frequently ſeen in gardens, at the ends of galleries, &c. expreſly deſigned to deceive the ſight.

PERSPECTIVE-GLASS. in optics, differs from a teleſcope in this: inſtead of the convex eye glaſs placed behind the image, to make the rays of each pencil go parallel to the eye, there is placed a concave eye-glaſs as much before it; which opens the converging rays, and makes them emerge parallel to the eye. The quantity of objects taken in at one view with this inſtrument, does not depend upon the breadth of the eye glaſs, as in the aſtronomicol teleſcope, but upon the breadth of the pupil of the eye.

PERSPECTIVE PLANE, a glaſs, or other tranſparent ſurface, ſuppoſed to be placed between the eye and the object, perpendicular to the horizon.

PERSPIRATION, in medicine, the evacuation of the juices of the body through the pores of the ſkin. Perſpiration is diſtinguiſhed into ſenſible and inſenſible: and here ſenſible perſpiration is the ſame with ſweating, and inſenſible perſpiration, that which eſcapes the notice of the ſenſes; and this laſt is the idea affixed to the word perſpiration, when uſed alone. The veſſels through which perſpiration is performed, lie obliquely under the ſcales of the ſcarf-ſkin, and are ſo inconceivably ſmall, that from a calculation made by Liewenhoeck, it appears that the mouths of an hundred and twenty-five thouſand of them may be covered with a common grain of ſand. The matter of inſenſible perſpiration is a fine ſubtile fluid, which exhales from the body in the form of a vapour, and proceeds from the whole ſurface and from every cavity: it is of an aqueous and ſaline nature, and ſeems to have a great anology with urine; becauſe in a healthy ſtate, the increaſe of the one diminiſhes the other. Many experiments prove its exiſtence. If you paſs your finger over a looking-glaſs, or any other poliſhed body, it will leave a track or moiſture. If you put your naked head near a white wall, expoſed to the ſun, the ſhadow of the vapours which proceed from the pores of the ſkin, may be plainly ſeen: or if you breathe upon glaſs, you may perceive it covered with ſmall drops of water; and the vapours which proceed from the lungs, are in winter condenſed by the cold, and form a kind of bluiſh miſt, proceeding from the mouth. Other experiments ſhew that the matter evacuated this way, is at leaſt in ſome countries more than equal to all the other evacuations by ſtool, urine, &c. Sanctorius found in Italy, under the circumſtances of a moderate diet, middle age, and eaſy life, that the matter inſenſibly perſpired was five-eighths of that taken in for food, ſo that there only remained three eights for nutrition, and for the excrements of the noſe, ears, inteſtines, bladder, &c. The ſame author ſhews, that as much is evacuated by perſpiration in one day, as by ſtool in fourteen days.

But Dr. Bryan Robinſon, of Dublin, has found the caſe very different, both in England and Ireland, and even in South Carolina, in all which places he found that the quantity of urine exceeds that of perſpiration; and that if the meat and drink of one day be four pounds and a half, the perſpiration of that day will be two pounds, the urine two pounds five ounces, and the ſtool three ounces.

The uſe of perſpiration is to preſerve the ſuppleneſs of the papillæ of the ſkin; to carry the ſaline particles off from the blood, and by this means to render it more pure; to preſerve the body from various diſeaſes, and to contribute to the cure of the moſt dangerous diſtempers. It may be promoted by exerciſe, by dry frictions with a coarſe linnen-cloth, or a fleſh-bruſh, by warm baths, and waſhing the hands, feet, head, &c.

PERU, a large country of South America, bounded on the north by Popayan, on the eaſt by the country of the Amazons, on the ſouth by Chili, and on the weſt by the South Sea; it is about fifteen hundred miles from north to ſouth, and one hundred and twenty-five from eaſt to weſt, between the Andes and the South Sea; but in other places it is much broader, and according to ſome, three hundred miles. It ſeldom rains here, and the inhabitants hardly know what lightning and thunder is, unleſs towards the top of the above mountains; for while the mathematicians from France were there to meaſure a degree of latitude, while they were making their obſervations, they not only ſaw the lightning, but heard the thunder below them, for they were above the clouds. All the tops of theſe mountains are covered with ſnow to a great height; and there are ſeveral volcanoes which burn continually; ſometimes ſuch torrents of water will fall down from thence that will overflow the whole country. There happened one in December, 742, that in ſome places the flood was ſixty feet high, and in others above one hundred and twenty; it carried away an infinite number of cattle, threw down ſix hundred houſes, and drowned eight hundred perſons. Some thought this water proceeded out of the rock, but others more judiciouſly concluded it came from the melting of the ſnow. The beſt houſes in this country are made of a ſort of reeds like bamboo-canes, and covered with thatch, or palm-leaves. However, they have a ſort of galleries or balconies, but there is no walking along the floors without making the whole ſtructure groan. There are large foreſts on the ſides of the mountains, which advance near the ſea-ſide; but none of their trees are like thoſe in Europe. The birds that are therein are much ſuperior to thoſe of Europe for the beauty of their plumage, but their notes are very diſagreeable. There are few birds near the ſea-ſide, and the monkeys alſo get at a diſtance from it. It has been generally ſaid there are lions here, but that which they call ſo is more like a wolf than a lion, and he never attacks mankind; but the tygers are as large and fierce as thoſe of Africa, though not of the ſame colour; however, it is happy for the inhabitants that there are but very few of them. Serpents are very common, and ſeveral ſorts of them are dangerous, particularly the rattle-ſnake. There are ſeveral inſects like thoſe in Europe, but they are vaſtly larger. The earth-worms are as long as a man's arm, and as thick as his thumb; likewiſe there are ſpiders covered with hair, and as large as a pigeon's egg. The bats are of a monſtrous ſize, and will ſuck the blood of horſes, mules, and even of men who ſleep in the fields. The famous bird, called a contor or condor, is perhaps the largeſt in the world, for it eaſily carries off a ſheep;

and ſome affirm it will carry off a whole buck. Peru is inhabited by the Spaniards who conquered it, and by the native Americans. Theſe laſt, that live among the foreſts, and form as it were ſo many ſmall republics, which are directed by a Spaniſh prieſt, and by their governor, aſſiſted by other original natives, that ſerve as officers. They have no diſtruſt, for they leave the doors of their huts always open, though they have cotton, calibaſhes, and a ſort of aloes, of which they make thread; and ſeveral other ſmall matters which they trade with, and which might be eaſily ſtolen. They go naked, and paint their bodies with a red drug, called rocu. The ſame man is of all trades, for he builds his own hut, conſtructs his own canoe, and weaves his own cloth; but if a large houſe is to be built for common uſe, every one lends a helping hand. Their ſkins are of a red copper colour; and they have no beards, or hair on any part of their bodies, except their heads, where it is black, long, and coarſe. Thoſe that are not much expoſed to the weather are of a lighter colour than the reſt. The natives who live at Quito, ſeem to be of a different temper; for they are all extremely idle, and will ſit whole days together upon their heels, without ſtirring or ſpeaking. Their garment is a ſort of ſack, with holes to put their arms through; and this is given them by their maſters as part of their wages. From a mixture of the native Americans and the Spaniards, there ariſes a third kind called Meſtices, who are illegitimate; however, they have all the privileges of a Spaniard, and are the perſons who carry on all trades; for the Spaniards think it beneath them to meddle with any thing of this ſort: theſe behave in a more tyrannical manner over the real Americans, than even the Spaniards themſelves, inſomuch that the governor is obliged to repreſs their inſolence. It was obſerved, that it ſeldom rains; but this muſt be underſtood of the ſouth parts; for in the north, where the mountains are not ſo high, it often rains exceſſively, inſomuch that thoſe who go thither in ſearch of gold are often carried off by the unwholeſomeneſs of the climate. Thoſe that travel over the Andes, where they are paſſable, find it ſo cold, that they are often frozen to death. They have a great number of fruits, plants, and trees not known in Europe; however, ſome of their phyſical drugs are brought over, which are of excellent uſe, and are well known in druggiſts ſhops, particularly the Jeſuits bark and Peruvian balſam. The Spaniards have introduced many herbs, plants, and trees from Europe, which thrive here very well, and the fruits they produce are very delicious. This country is divided into five great audiences, which are Quito, De los Reyes, and De las Charchas, which will be taken notice of in their proper places. The immenſe riches, produced by the mines of gold and ſilver, in Peru, have been ſo often mentioned, that it would be unneceſſary to enlarge upon it here.

PEST-HOUSE, the ſame with lazaretto or lazar-houſe.

PESTILENCE, in medicine, an epidemical, contagious, and malignant diſeaſe, popularly known by the name of plague.

PESTILENTIAL FEVERS, ſuch as are attended with ſome malignant quality, and approach to the nature of the plague.

PETAL, among botaniſts, an appellation given to the flower-leaves, in oppoſition to the folia, or common leaves of the plant. According to the number of petals in each flower it is ſaid to be monopetalous, or to conſiſt of a ſingle petal; dipetalous, when it has two; tripetalous, when three, &c. See *Flower*.

PETARD, in the art of war, a metalline engine, ſomewhat reſembling a high crowned hat.

The petard may be conſidered as a piece of ordnance. It is made of copper mixed with braſs, or of lead with tin; and its charge is from five to ſix pounds of powder. Its uſe is in a clandeſtine attack to break down gates, bridges, barriers, &c. to which it is hung; and this it does by means of the wooden plank. It is alſo uſed in countermines to break through the enemy's galleries, and give their mines vent. The invention of petards is aſcribed to the French Huguenots, in 1579, who with them took Cahors, as D'Aubigné tells us.

PETARDEER, one who loads, fixes, and fires petards.

PETECHIÆ, in medicine, denote ſpots in the ſkin like flea-bites, which come out in malignant fevers, hence called petechial, or ſpotted fevers.

PETER, or *Epiſtles of St* PETER, two canonical books of the New Teſtament, written by St. Peter, and addreſſed

dreſſed to thoſe Jewiſh converts who were ſcattered throughout Pontus, Galatia, &c. not only upon the perſecution raiſed at Jeruſalem, but upon former diſperſions of the Jews into thoſe places. The firſt of theſe epiſtles is principally deſigned to comfort and confirm them under thoſe fiery trials they were then ſubject to; and to direct them how to behave in the ſeveral ſtates and relations, both of the civil and the Chriſtian life. In the ſecond epiſtle, the apoſtle proſecutes the ſame ſubject, to prevent their apoſtacy from the faith, and guard them againſt the corrupt principles of the Gnoſtics, and thoſe who ſcoffed at the promiſe of Chriſt's coming.

* PETER (St.) one of the apoſtles, was born at Bethſaida in Gallilee, and was firſt named Simon; but Chriſt having called him to be an apoſtle, changed his name to that of Cephas, which is the ſame with Peter; for while he was fiſhing on the lake of Genazereth, with Andrew his brother, the ſon of God ordered them to leave their nets and to follow him, and from that time they continued his diſciples. He was a witneſs to our Lord's transfiguration on the mount; he was preſent at the laſt ſupper, and in the garden when the ſoldiers came to ſeize Jeſus, where being tranſported with zeal, he drew his ſword, and cut off the high-prieſt's ſervant's ear. St. Peter then denied his knowing his Lord, and perſiſted in it three times, till the cock-crowing, reminded him of Jeſus's having foretold this inſtance of his weakneſs, on which he ſhewed his repentance by his tears. St. Peter was likewiſe a witneſs of Chriſt's reſurrection and aſcenſion, and of the deſcent of the Holy Ghoſt. He afterwards zealouſly preached the goſpel; converted three thouſand perſons at his firſt ſermon, and performed many ſurpriſing miracles in proof of his divine miſſion. Some time after Herod Agrippa cauſed him to be impriſoned at Jeruſalem, whence he was delivered by an angel. He afterwards oppoſed St. Paul at Antioch, and ſuffered martyrdom, being, according to ſome, killed in priſon, and, according to others, crucified with his head downwards. He wrote two Epiſtles, addreſſed to the converted Jews diſperſed throughout Aſia.

* PETERBOROUGH, an epiſcopal city of Northamptonſhire, with a market on Saturdays; and two fairs, on July 10, and October 2, for horſes, all kinds of ſtock, and wrought timber. It is ſeated on the river Nen, which is navigable for barges, over which there is a bridge to paſs into Huntingdonſhire. The cathedral is a ſtately ſtructure, with a venerable front, and large cloiſters, and St. Mary's chapel is a handſome large building, full of curious work, with a large choir. Here the queens Catharine of Spain and Mary of Scots, lie interred. This place is of no great extent, and has but one pariſh church beſides the cathedral. It ſends two members to parliament, and the mayor, recorder, and other officers of the city, are elected by the dean and chapter. It is thirty-eight miles ſouth of Boſton, and eighty-one north-by weſt of London. Long. 0. 15. W. Lat. 52. 33 N.

* PETERSBURG, a large city of Ruſſia, and the capital of the whole empire, built by Peter the Great, czar of Muſcovy, in 1703. It is of prodigious extent, and contained not long ago 60,000 houſes. It is ſeated in an iſland, in the middle of the river Neiva, where the land has been conſiderably raiſed. The fort has ſix baſtions, and oppoſite to it, on Terre Firma, is a crown work. The fort has two gates, at the entrance of which is the figure of the czar holding two keys, and within is a black eagle crowned, holding in his claws a ſceptre, and an imperial globe. A little farther is the chapel of St. Nicholas, the chief patron of Ruſſia. Within this fort, or citadel, is the church of St. Peter and St. Paul, with a high ſteeple, and is deſigned for the burying-place of the royal family. In an arm of the river, between the crown work and the fort, the emperor's galleys are laid up during the winter ſeaſon. On this ſide the fort there are two quarters called the Slabod of the Germans, and the Slabod of the Muſcovites. In the firſt there are the ſummer and and winter palaces, the houſes belonging to the admiralty, a church, and a dock for building ſhips: in the other Slabod is the palace of the empreſs, where ſhe formerly reſided. Beyond the forts are the Slabods of the Tartars and Finlanders; and in both there are very ſuperb ſtructures. In 1716 they began to cut canals in the iſland, to make Peterſburg reſemble Amſterdam; but the czar did not live to ſee this project executed. There are built here many palaces, a college, a military ſchool, and an exchange. This place is not high enough to eſcape inundations, which ſometimes have occaſioned the loſs of vaſt ſums of

money. When the merchants perceive a flood is coming on, they make dykes before their houſes, to keep out the water. At firſt proviſions were ſcarce, and the trade was ſmall, becauſe the lakes Ladoga and Onega had not depth enough to carry large veſſels; but Peter the Great remedied this inconveniency in 1720, by cutting a canal from the lake Ladoga, of about ſeventy-five miles in length, ſeventy feet wide, and ten in depth. Ten years were employed in this work, but it was not finiſhed till the next reign; and thus Peterſburg may readily be ſupplied with proviſions. Trade flouriſhes greatly here, becauſe it is the ſeat of the ſovereign, and becauſe foreigners have the ſame privileges as the natives of the place. All religions are tolerated, and there are pacquet-boats, by which intelligence is conveyed to different places. The inhabitants alſo carry on a trade by land with the Chineſe and Perſians. They have woollen and linen manufacfactures here, paper-mills, powder-mills, places for preparing ſalt-petre, brimſtone, and elaboratories for fire-works. Here are alſo yards for making ropes, cables, and tackling for ſhips; a foundery, where cannon and mortars are caſt; as alſo a printing houſe. A road is made between Peterſburg and Moſcow, in a ſtrait line acroſs the foreſts, planted with trees on each ſide, and which is 355 miles in length. It was finiſhed in 1718; and at the end of every five miles there are poſts eight feet high ſet up to direct travellers. Some ſtreets of this city are regular and well built; and among the moſt elegant ſtructures may be reckoned the great chancellor's houſe, that of the vice-chancellor, count Gallowin's, and ſome others. They are moſtly brick plaiſtered over; and though the climate is ſo very cold, yet they have more windows than they generally have in England. An Italian architect, who ſettled here many years, contributed not a little to the beauty of the city. The ſummer palace, and gardens lie to the eaſt, where there are fine walks, and choice ſtatues. Near it is the theatre, which was erected in the room of a wooden one, burnt down to the ground. It is 355 miles north-weſt of Moſcow, 750 north-eaſt of Vienna, and 1250 north-eaſt of Paris.

St. PETER'S DAY, a feſtival of the Chriſtian church, obſerved on the twenty-ninth of June.

PETER-PENCE, an ancient tax of a penny on each houſe, paid to the pope.

PETITIO PRINCIPII, in logic, the taking a thing for true, and drawing concluſions from it as ſuch; when it is really falſe, or at leaſt wants to be proved, before any inferences can be deduced from it.

PETITION, a formal ſupplication or requeſt made by an inferior to a ſuperior, eſpecially to one having ſome juriſdiction.

PETRE, or SALT-PETRE, the ſame with nitre. See *Nitre.*

PETRIFACTION, in phyſiology, the converſion of wood, bones, and other ſubſtances into ſtone.

PETROLEUM, alſo called oil, or oil of petre, an extremely ſubtile and penetrating fluid, and is by much the thineſt of all the native bitumens. Petroleum is found in rivers, in wells, and trickling down the ſides of hills along with little ſtreams of water. In ſhort, it is the moſt frequent of all the liquid bitumens, and is perhaps the moſt valuable of them all in medicine. It is to be choſen the pureſt, lighteſt, and moſt pellucid that can be had, ſuch as is of the moſt penetrating ſmell, and is moſt inflammable. It is principally uſed externally, in paralytic caſes, and in pains of the limbs.

PETROSA OSSA, in anatomy, a name given to the fourth and fifth bones of the cranium, called alſo oſſa temporum, and oſſa ſquamoſa; the ſubſtance whereof, as their firſt and laſt names expreſs, is ſquamoſe and very hard.

PETTY-BAG, an office in chancery, the three clerks of which record the return of all inquiſitions out of every county, and make all patents of comptrollers, gaugers, cuſtomers, &c.

PETTY-FOGGER, a little tricking ſolicitor or attorney, without either ſkill or conſcience.

PEWTER, a factitious metal, uſed in making domeſtic utenſils, as plates, diſhes, &c. The baſis of this metal is tin, which is converted into pewter, by mixing an hundred weight of tin with fifteen pounds of lead and ſix pounds of braſs. Beſide this compoſition, which makes the common pewter, there are other kinds compounded of tin, regulus of antimony, biſmuth and copper, in ſeveral proportions.

PHÆNOMENON, in philoſophy, an extraordinary appearance in the heavens, or earth, either by obſervation of the celeſtial bodies, or by phyſical experiments, whoſe cauſe is not obvious. Such are meteors, comets, earthquakes, effects of the magnet, &c. Sir Iſaac Newton ſhews, that all the phænomena of the heavenly bodies follow from the attraction of gravity, and almoſt every phænomenon of the leſſer bodies from the attraction and repulſion between their particles. See *Attraction.*

* PHAETON, in fabulous hiſtory, the ſon of Apollo, and the nymph Clymene. Having a diſpute with Epaphus, the ſon of Jupiter and Io, the latter upbraiding him, ſaid, that he was not the ſon of Phœbus, but that his mother made uſe of that pretence to cover her infamy. Phaeton fired at this reproach, flew to his mother, and by her advice complained to Apollo, who received him with great tenderneſs, and ſwore by the Styx to grant whatever he requeſted, as a proof of his acknowledging him for his ſon. The youth boldly requeſted the direction of the chariot of the ſun for one day. His father, grieved and ſurprized at this demand, uſed all his arguments to diſſuade him from the raſh attempt; but in vain, and being by his oath reduced to ſubmit to his obſtinacy, entruſted him with the reins, after directing him how to uſe them. The young adventurer was however ſoon ſenſible of his folly. He was unable to guide the fiery ſteeds, and loſing the reins, Jupiter, to prevent his conſuming the heavens and earth, ſtruck him with a thunderbolt, and hurled him from his ſeat into the river Eridanus or Po. His ſiſters Phaethuſa, Lambetia, and Phœbe, lamenting his loſs upon its banks, were changed into black poplar trees, and Cycnus, king of Liguria, alſo lamenting his fate, was transformed into a ſwan. Many have conſidered it as a fable intended to ſhew the effects of raſh preſumption and obſtinacy in young people, who refuſe to be guided by thoſe whoſe wiſdom and authority ought to regulate their actions.

PHAGEDÆNA, φαγεδαινα, in ſurgery, a corroding ulcer.

PHAGEDÆNIC MEDICINES, thoſe uſed to eat off fungous or proud fleſh; ſuch are all the cauſtics.

PHALANX, in Grecian antiquity, a ſquare battalion, conſiſting of eight thouſand men, with their ſhields joined, and pikes croſſing each other; ſo that it was next to impoſſible to break it.

* PHALANX, in fabulous hiſtory, an Athenian whom Pallas inſtructed in the art of war, at the ſame time that ſhe inſtructed his ſiſter, Arachne, in ſewing and weaving; but Phalanx committing inceſt with his ſiſter, Pallas transformed them both into vipers, and for a further puniſhment, ordering that the young ones ſhould eat their way through the body of the female.

PHALEUCIAN VERSE, in ancient poetry, a kind of verſe which conſiſts of five feet, the firſt of which is a ſpondee, the ſecond a dactyl, and the three laſt trochees.

PHANATIC, a term of reproach formerly given to the diſſenters, from a falſe ſuppoſition that they pretended to viſions, &c.

PHANTASTIC STYLE, in muſic, denotes a free and eaſy manner of compoſition, proper for inſtruments.

PHANTASY, or FANCY, the ſame with imagination.

* PHAON, in fabulous hiſtory, was born at Mitylene, in the iſland of Leſbos, and received from Venus an alabaſter box of rich ointment, by rubbing himſelf with which he became handſomer than the reſt of mankind. The women and girls of Mitylene became diſtractedly in love with him, and Sappho, the celebrated poeteſs, being unable to prevail on him to return her paſſion, in a fit of diſtraction caſt herſelf headlong into the ſea. After which, Phaon being caught in adultery, was ſlain.

PHARMACEUTICA, pharmaceutics, that part of medicine, which gives the deſcription of remedies, and teaches the method of rightly exhibiting them.

PHARMACOPOEIA, a diſpenſary, a treatiſe deſcribing the preparations of the ſeveral kinds of medicines, with their uſes, manner of application, &c.

PHARMACOPOLA, an apothecary, or one who prepares and ſells medicines.

PHARMACY, the art or ſcience which teaches the choice, preparation, and mixtures of medicines; conſtituting one part of the therapeutic branch of medicine, the objects of which are all natural bodies.

PHARYNX, in anatomy, the upper part of the œſophagus. See *Oeſophagus.*

PHASES, φασεις, in aſtronomy, the ſeveral appearances or quantities of illumination of the moon, Venus, Mercury, and the other planets; or the ſeveral manners wherein they appear illuminated by the ſun.

PHEASANT, *Phaſianus*, in ornithology,

thology, a genus of birds of the order of the gallinæ, with the ſpace about the eyes naked, and no wattles.

PHELLANDRIUM, WATER-HEMLOCK, in botany, a genus of plants.

PHEONS, in heraldry, the barbed heads of darts, arrows, or other weapons.

PHIAL, a ſmall thin glaſs bottle, vulgarly called a vial.

* PHILADELPHIA, the capital city of Penſylvania, in North America, in a county of the ſame name. It is of an oblong ſquare, two miles in length, and one in breadth; and the high ſtreet runs from the middle of one front to another. In the center of the town is a ſquare of ten acres, ſurrounded by the town-houſe and other public buildings. The high ſtreet is 100 feet wide, and parallel to it there are eight ſtreets, which are croſſed by twenty more at right angles, all of them being thirty feet wide. It is ſeated between the rivers Delawar and Shuylkill, which are cloſe to it at each end; and there is a fine quay next to the Delawar, to which ſhips of 4 or 500 tons may come up. There are wet and dry docks for building and repairing ſhips, magazines, warehouſes, and all manner of conveniencies for importing and exporting merchandizes. The houſes are chiefly built with brick. The town-houſe was erected in 1732, in which there are large rooms for the aſſembly and ſupreme court. The public offices are kept in the wings. The other public buildings are, the court-houſe, two Quakers meeting-houſes, two for the Preſbyterians, and one for the Baptiſts. There are alſo a church for the Engliſh ſervice, one for the Dutch Lutherans, one for the Dutch Calviniſts, and one for the Moravians, beſides a maſs-houſe, an academy, a Quakers ſchool-houſe, the city alms-houſe, the Quakers alms-houſe, the hoſpital, the priſon, and the workhouſe. Long. 74. 0. W. Lat. 40. 50. N.

PHILIPPICS, in literature, a name given to the orations of Demoſthenes againſt Philip king of Macedon; being eſteemed the maſter-pieces of that great orator. Philippic is alſo a term applied to the fourteen orations of Cicero againſt Mark Antony.

* PHILIPS, AMBROSE, an eminent poet, was deſcended from an ancient family in Leiceſterſhire, and educated at St. John's college, Cambridge, where he wrote his paſtorals, which were much admired by Sir Richard Steele, and which Gildon, in his Art of Poetry, ranks with thoſe of Theocritus and Virgil. When he left the univerſity he repaired to London, where he became acquainted with the wits, and Sir Richard inſerted in the Tatler his poem called a Winter-piece. Sir Richard mentions it with honour; and Mr. Pope, who had an averſion to Philips, when he affected to deſpiſe his other works, always excepted this out of the number. After the acceſſion of king George I. to the throne, Mr. Philips was made juſtice of the peace. In the mean time, having incurred the diſpleaſure of Mr. Pope, he ſatirized him with his uſual ſeverity. This is ſaid to have been owing to his mentioning Mr. Pope as an enemy to the government. Mr. Philips, unable to uſe the laſh of ſatire againſt ſo expert a maſter of that weapon, had recourſe to another, and ſtuck up a rod at Button's coffee-houſe, with which he threatened to chaſtize his antagoniſt whenever he ſhould meet him there: but Pope prudently declined coming to a place where he muſt have felt the reſentment of an offended author. Mr. Philips wrote three tragedies, the Diſtreſſed Mother, Humfrey Duke of Glouceſter, and the Briton. At length his friend, Dr. Boulter, being made archbiſhop of Armagh, he accompanied him into Ireland, where he obtained conſiderable employments, and became a repreſentative in parliament for the county of Armagh. In 1748 he returned to London, but ſoon after died at his lodgings near Vauxhall. He was far from being ſo contemptible a poet as Mr. Pope (from reſentment) endeavoured to repreſent him.

PHILLYREA, or PHYLLYREA, in botany, a genus of plants. The leaves and bark of this ſhrub are ſaid to be aſtringent, and good in ulcers of the mouth; but they are little regarded in the preſent practice.

PHILOLOGY, an aſſembly of ſeveral ſciences, conſiſting of grammar, rhetoric, poetry, antiquities, hiſtory, and criticiſm. It is a kind of univerſal literature converſant about all the ſciences, their riſe, progreſs, authors, &c. being what the French call the belles lettres. It is called in the univerſities, *humanities*, or *literæ humaniores*.

PHILOSOPHER, one well verſed in philoſophy, or who applies himſelf to the ſtudy of nature and morality. The word is formed from the Greeek, φιλοσοφος, which is compounded of φιλος, a lover, and σοφος, wiſdom.

PHILOSOPHERS STONE, in alchemy, a long-ſought-for preparation, which is to tranſmute or exalt impurer metals, ſuch as tin, lead, and copper, into gold and ſilver. There are three ways whereby the alchemiſts have attempted to arrive at the making of gold; the firſt by ſeparation, the ſecond by maturation, and the third by tranſmuting or turning of all metals readily into pure gold, by melting them in the fire, and caſting a little quantity of a certain preparation into the fuſed matter, upon which the fæces are volatilized and burnt, and the reſt of the maſs turned into pure gold. Whether this third method be poſſible, is very hard to ſay. One natural argument will ſuffice to ſhew the vain pretences of making gold by art. Very plain receipts have been laid down on this ſubject, but, after ten thouſand experiments according to theſe directions, they have always failed of ſucceſs; or, if there was any little gold found, the quantity was ſo ſmall, that it did not near anſwer the trouble and expence, nor give any encouragement to repeat the operation.

PHILOSOPHIC, or PHILOSOPHICAL, relating to philoſophy.

PHILOSOPHICAL EGG, among chemiſts, a thin glaſs body, or bubble, of the ſhape of an egg, with a long neck or ſtem, uſed in digeſtions.

PHILOSOPHY, φίλοσοφια, the knowledge or ſtudy of nature and morality, founded on reaſon and experience. Philoſophy, among the ancients, was uſed in various ſenſes: for, 1. It ſometimes was taken for univerſal knowledge, viz. of all things human and divine. 2. In a ſtricter notion, for the contemplation of nature only. 3. Sometimes for ethics, or the doctrine of manners, which we call moral philoſophy. 4. It included alſo the mathematical arts and diſcipline, eſpecially arithmetic and geometry. 5. The doctrine of exiſtence, or *being* in the abſtract, called metaphyſics. 6. For the knowledge of the prime or chief good, viz. God; and this was their prima philoſophia, or theology. 7. It was ſometimes applied to logics or dialectics, which gave rules for reaſoning about the nature of things.

Philoſophy may be divided into three parts, intellectual, moral, or phyſical. The intellectual part comprizes logics and metaphyſics; the moral part contains the laws of nature and nations; and, laſtly, the phyſical part comprehends the doctrine of bodies animate or inanimate. Theſe, with their various ſubdiviſions, will take in the whole of philoſophy. See *Logic*, *Metaphyſics*, *Ethics*, *Politics*, &c.

PHILTER, FILTER, in pharmacy. See *Filter*.

PHILTER, or PHILTRE, φιλτρον, is more particularly uſed for a love-potion or medicine to excite love.

PHIMOSIS, in medicine, a diſorder of the penis, in which the prepuce is rendered ſo ſtrict or tenſe, that it cannot be drawn back over the glans. The general cauſe of a phymoſis is rightly aſcribed to impure coition; for while the virulent matter which had been lodged in the ſinuſes of the vagina, continues between the ſkin and glans, the prepuce, eſpecially if it be long or tight, can hardly eſcape being ſwelled with an inflammation, and a phimoſis muſt be induced. Some, however, have the foreſkin naturally ſo long, and ſo ſtraight, that the glans can either be not at all, or very little uncovered; but as this neither occaſions trouble in diſcharging the urine, nor any impediment in procreation, it requires no aid from the ſurgeon, unleſs it be attended with inflammation, violent pain, or any remarkable inconvenience in coition.

PHLEBOTOMY, in ſurgery, the opening a vein with a proper ſharp-edged and pointed inſtrument of ſteel in order to let out a proper quantity of blood, either for the preſervation or recovery of a perſon's health. Phlebotomy, or bleeding, appears to be not only one of the moſt uſeful, but one of the moſt ancient operations in ſurgery, and is frequently performed in different parts of the body, as the foot, the forehead, temples, neck, tongue, penis, and the other parts, yet is moſt generally performed in that vein of the inſide of the arm, which lies near the joint of the cubit.

The ſurgeon having tied on a fillet, about a hand's breadth above the bend of the cubit; and the veins being compreſſed and enlarged, by the blood's being ſtopped in its return, he is to examine which vein lies faireſt, and is therefore moſt proper to be opened. In the arm are three principal veins; the firſt or uppermoſt of which is called the cephalic vein, the undermoſt the baſilic vein, and that in the middle the median. And here it is obſerved, that the median and baſilic veins, as they are larger than the cephalic, diſcharge a greater quantity of blood, but are attended with more danger in the operation; for a conſiderable artery and the brachial nerve lie under the baſilic vein, and the tendon of the biceps muſcle under the median; but as they lie fairer to the eye, it is ſafer for the unexperienced ſurgeon to open the cephalic, or at leaſt the median vein, but ſometimes the veins are ſo ſituated as to deprive him of all choice. When the veins are not riſen, it will be proper to rub the arm below the bandage, to drive up the blood, and render the veins more turgid: while this is doing, the ſurgeon ſhould lay his thumb on the vein he intends to open, to prevent the blood from flowing back, and to keep the vein from rolling; and then holding the lancet, ſo that the thumb and firſt finger may be fixed about the middle of the blade, the other fingers ſhould reſt gently upon the patient's arm, to prevent his hand from ſlipping. The lancet is now to be puſhed lightly and carefully forward by the thumb and forefinger, till it has penetrated through the coats of the vein, and at that inſtant to be raiſed a little upwards in order to enlarge the orifice of the wound, and give a freer paſſage to the blood. When there ſeems to be a ſufficient quantity of blood diſcharged, the ligature muſt be immediately taken off, from above the elbow, and the ſkin about the orifice muſt be gently preſſed together, by which means the lips of the divided vein are eaſily cloſed, and the little blood that may remain between the orifice and the vain diſcharged: one or two compreſſes are then put on, which the ſurgeon preſſes gently on the orifice with his left thumb, till the bandage is laid acroſs it, which is afterwards faſtened by turning it round the arm, both above and below the elbow, and tying both together.

In bleeding in the foot, it muſt be obſerved, that the veins proper for this operation, are the ſaphena and cephalica, the laſt of which extends itſelf from the internal ancle to the great toe; and the firſt, from the external malleolus to the ſmaller toes: bleeding in each of which is attended with the ſame effect: but if the veins upon the metatarſus, or inſtep, do not fully appear, it may be convenient to open one of thoſe at the ancle, or about the calf or ham of the leg, where the phlebotomiſt is not ſo liable to injure any of the tendons, as in the metatarſus. For the more eaſy appertion of theſe veins, the patient muſt firſt waſh both feet in warm water; and the ſurgeon having fixed upon the particular foot and vein, which appears moſt turgid, he applies a ligature about two fingers breadth, above the ancle, or where he intends to open the vein, and puts it in the warm water again, while he takes out his lancet. Then kneeling down on one knee, he takes out the foot, and it being wiped dry, places it on the other knee, or upon a board laid over the veſſel of warm water, and, ſecuring the vein from ſlipping with the thumb of his left hand, makes the orifice; but if the patient does not bleed freely, puts the foot again in the warm water, till he judges by its colour, and the ſtrength of the patient, that a ſufficient quantity of blood has been drawn: the orifice is then to be cloſed by the thumbs, and, after drying the foot with a napkin, to be ſecured by compreſſes and a bandage.

In bleeding in the jugular veins of the neck, a ſtricture muſt be made round the lower part of the neck, with a neck-cloth or handkerchief, or the common ligature, to make the vein turgid or conſpicuous, and then either of the jugular veins being ſecured by the thumb, the inciſion muſt be made, and the requiſite quantity of blood being taken away, the ligature muſt be removed, and the orifice compreſſed with the thumb, if the blood does not ſtop without, while the neck is wiped clean; after which the compreſs and circular bandage muſt be applied. It is to be obſerved, that if the diſorder lies in the whole head, or in the neck and fauces, the orifice may be made either in the right or left ſide indifferently; but when only one ſide of the head, or one eye is affected, the vein ought to be opened on that ſide on which the diſorder lies.

In bleeding in the veins of the forehead, temples, and occiput, a ſtricture muſt be made round the neck, and the ſame method uſed as in opening the jugular veins; only obſerving that the patient muſt hold down his head, to prevent the blood trickling into his eyes, &c.

In bleeding in the veins called ranulæ, under the tongue, a ſtricture muſt be made round the neck, as before; you then elevate the apex of the tongue with your left hand, while with the lancet in your right hand, you circumſpectly open firſt one, and then the other, on each ſide; becauſe the apertion of one only will hardly ever diſcharge blood enough to give any conſiderable relief. When you judge that a ſufficient quantity of blood has run out of the mouth into the veſſel, remove the ligature from the neck, upon which the flux uſually ſtops of itſelf: but if it ſhould ſtill continue, let the patient take a little vinegar or Frontiniac wine in his mouth, and hold it there till the hæmorrhage ceaſes, which cannot be dangerous, even without ſuch topics. In bleeding in the vena dorſalis penis, which runs along the upper ſide of the penis, and is generally pretty much diſtended, and conſpicuous in an inflammation of this part, it is to be obſerved that it muſt be opened about the middle, and kept bleeding till the member becomes flaccid, and a ſufficient quantity of blood is diſcharged: which done, you muſt apply a compreſs, and the bandage proper for the penis. But you muſt carefully endeavour to avoid injuring the arteries or nerves which enter the penis near this vein; as alſo not to make your bandage too ſtrict; for by this means, the inflammation and ſymptoms may turn out worſe than before.

PHLEGM, in the animal œconomy, one of the four humours whereof the ancients ſuppoſed the blood to be compoſed. See *Blood*.

PHLEGMATIC, among phyſicians, an appellation given to that temperament, or habit of the body, wherein phlegm is predominant; which gives riſe to catarrhs, coughs, &c.

PHOCA, the ſea-calf, in zoology, a genus of quadrupeds of the order of the feræ: the fore-teeth in the upper jaw are ſix, thoſe in the under jaw are only four; the feet have each five toes, and are palmated, and made for ſwimming: there are no ears.

PHOENIX, in aſtronomy, one of the conſtellations of the ſouthern hemiſphere unknown to the ancients, and inviſible in our northern parts. This conſtellation is ſaid to conſiſt of thirteen ſtars. It took its name from that of a bird famous among the ancients, but generally looked upon by the moderns as fabulous. The ancients ſpeak of this bird as ſingle, or the only one of its kind: they deſcribe it as of the ſize of an eagle; its head finely creſted with a beautiful plumage, its neck covered with feathers of a gold colour, and the reſt of its body purple, only the tail white, and the eyes ſparkling like ſtars; they hold that it lives 5 or 600 years in the wilderneſs; that when thus advanced in age, it builds itſelf a pile of ſweet wood and aromatic gums, and fires it with the wafting of its wings, and thus burns itſelf; and that from its aſhes ariſes a worm, which in time grows up to be a phœnix.

PHOENIX, the great palm, or date-tree, in botany.

PHOLAS, a ſhell-fiſh of the multivalve kind, compoſed of five pieces, three of which are very ſmall, ſo that they ſeem to a ſuperficial obſerver to be made up of only two ſhells. The animal inhabiting the pholas is called tethys. They inhabit holes made in ſtones, and other ſolid bodies, as corals, the bottoms of ſhips, &c. whence all ſhell-fiſh living in this manner have been commonly called pholades, ſince there are muſcles and chamæ found lodged in the ſame manner.

PHOSPHORUS, in phyſiology, a denomination given to all bodies which ſhine and ſeem to burn, without having any degree of heat. Chemiſtry, ſays Dr. Shaw, hath ſcarce afforded any thing more ſurpriſing than the common phoſphorus. To ſee letters traced with this matter become luminous in the dark, images and the bodies of men to blaze with light, and abundance of the like experiments performed by means of phoſphorus, muſt awaken the curioſity of thoſe who have ſeen theſe experiments, and render them deſirous of being acquainted with the method of preparing it. The preparation, even to this day, is kept as a ſecret in few hands, and the matter ſold at a very great price; whence we apprehend it would be no unacceptable preſent to the world, to render this commodity cheaper, and diſcover its farther uſes.

The ſucceſsful method of preparing the phoſphorus of urine is this: evaporate any quantity of freſh urine over a gentle fire, to a black and almoſt dry ſubſtance; then, with two pounds thereof, thoroughly mix twice its weight of fine ſand; put this mixture into a ſtrong coated ſtone long-neck, and having poured a quart or two of clear water into a large receiver, join it to the long-neck, and work it in a naked fire: let the heat be ſmall for the firſt two hours; then increaſe it gradually to the utmoſt violence; and continue this for three or four hours ſucceſſively: at the expiration of which time there will paſs into the receiver a little phlegm and volatile ſalt, much black and fœtid oil, and laſtly, the matter of phoſphorus in form of white clouds, which either ſtick to the ſides of the receiver, like a fine yellow ſkin, or fall to the bottom in form of ſmall ſand. Now let the fire go out, but let the receiver continue till all be cold, leſt the phoſphorus take fire on the admiſſion of the air. To reduce theſe ſmall grains into one piece, put them into a little tin ingot-mould, with water; heat the ingot to make the grains melt together; then add cold water, till the matter is congealed into one ſolid ſtick, like bees-wax; which being cut into ſmall pieces, fit to enter the mouth of a vial, may be preſerved by water, and keeping the glaſs cloſe ſtopped. If the glaſs were not to be ſtopped, the phoſphorus would turn black on its ſurface, and at length be ſpoiled.

The cautions required to make this proceſs ſucceed, are, 1. To evaporate the urine, while it is recent. 2. To prevent its boiling over, and by that means loſing the moſt unctuous part. 3. To let the matter afterwards ferment in the cold. 4. To mix the black matter with the ſand, to prevent its melting and running over. 5. To uſe a ſtone long-neck, thoſe of earth being too porus, and ſuffering the phoſphorus to tranſude ſooner than paſs into the receiver. 6. To have the receiver very large, and with a very long neck, to prevent its breaking and over-heating, which would either evaporate the white vapour wherein the phoſphorus conſiſts, or elſe prevent its coagulating. 7. To put water into the receiver for keeping it cool, and quenching the phoſphorus, as it falls to the bottom. 8. To make the fire ſmall at firſt, that the long-neck may be preſerved, and the black matter gradually dried; which would otherwiſe ſwell and run over in a black froth 9. Laſtly, it is found neceſſary, that the urine for the operation be of ſuch as drink malt-liquors rather than wine. All theſe circumſtances being required for obtaining the phoſphorus to advantage, it is no wonder that ſo many of thoſe who attempted it miſcarried.

This operation may be greatly ſhortened, by freezing and concentrating freſh urine; afterwards evaporating it with care; then digeſting it in the manner above mentioned. When thoroughly digeſted, commit the matter, in a large quantity, to an iron pot, with an earthen head, as the chemiſts uſually do for making ſpirit of hartſhorn, or the ſpirit and ſalt of urine: and when, by this method, all the ſalt and oil are obtained, let the caput mortuum be taken out, and mixed with twice its own weight of alum. The matter may now be put into well-coated long-necks, and worked with care in a reverberatory furnace, into very large receivers filled with water and connected to the long-necks by adopters, the lower ends whereof may enter the water, as in diſtilling of quickſilver; the operation being continued eight or ten hours. And this is apprehended to be the beſt way hitherto known of procuring phoſphorus to advantage.

PHRASE, in grammar, a manner of ſpeech peculiarly adapted to certain occaſions, arts, languages, &c. Sometimes the word phraſe is uſed for a ſhort ſentence.

PHRASEOLOGY, in matters of literature, a collection of the phraſes and elegant expreſſions, in any language.

PHRENETIC Veſſels, in anatomy, the nerves, arteries, and veins which are ſpread over the diaphragm.

PHRENSY, φρενιτις, in medicine, an inflammation of the membranes of the brain, attended with an acute fever and delirium. This diſeaſe, ſays Arbuthnot, requires the ſpeedieſt applications of all others; profuſe hæmorrhages of the noſe often reſolve it; and copious bleeding in the temporal arteries is the moſt efficacious remedy. The diet ſhould be water-gruel acidulated; and the drink barley-water, ſmall beer, or the decoction of tamarinds. According to Boerhaave, varices of the veins, or the bleeding piles, are beneficial; a looſeneſs is likewiſe good; and a violent cough, or hæmorrhage, often put an end to the diſeaſe. He therefore adviſes plentiful bleeding through a large orifice, or to open ſeveral veins at the ſame time, as the jugular, frontal, and a vein in the foot.

Hoffman, from experience, prefers bleeding at the noſe, procured by thruſting up a ſtraw, a pen, or a ſkewer. But if this diſeaſe proceeds from a ſuppreſſion of the lochia or menſes, ſpeedy and copious bleeding in the foot is neceſſary; and if from a ſtoppage of the bleeding piles, leeches muſt be applied to the hæmorrhoidal veins. After bleeding, cathartics are proper: among which the following is preferable to all others: take of manna, four ounces; of cream of tartar, two drams; of nitre, half a dram; of oil of ſweet almonds, an ounce; all which are to be taken in a pound of whey. The drink alſo ſhould be freſh whey. Emulſions,

ſions of the four cold ſeeds with barley-water, adding to every quart two ſcruples of nitre, are alſo convenient.

Externally, warm baths are proper for the feet; or linen-cloths may be dipped in hot-water, and applied to the feet. But eſpecially let the head be ſhaved all over, and embrocated with a mixture of the beſt vinegar, two ounces; camphorated ſpirit of wine, two drams; purified nitre, two ſcruples; and oil of rhodium-wood, twenty drops. Antiphlogiſtic clyſters are alſo proper.

But if all theſe means fail, recourſe muſt be had to cupping in the lower parts, to opiates and mild bliſters: though Hoffman thinks the two latter hurtful; and Boerhaave adviſes the phyſician to conſider well, if the caſe be ſymptomatical, how far the foregoing method, or any part of it, is conſiſtent with the primary diſeaſe.

PHTHIRIASIS, in medicine, the pedicularis morbus, or louſy diſeaſe, is moſt incident to children, though adults are not wholly exempt from it. Cleanneſs and wholeſome food are beſt for preventing this diſorder, which may be cured by waſhing the body with a lixivium of wormwood, ſtaves-acre, leſſer centaury, and oak aſhes; adding ſome common ſalt. All the bitters, ſour and ſalt things, are here recommended; as is alſo mercury, which infallibly deſtroys theſe vermin; but it ought to be uſed with great caution, even by adults, and ſhould never be uſed in applications to children.

PHTHISIS, a ſpecies of conſumption ariſing from an ulcer of the lungs. See *Conſumption*.

The ſigns of an approaching phthiſis, according to Morton, is a dry cough, which may continue for ſome months; whereas a ſimple catarrh is attended with ſpitting, and is but of ſhort duration. Vomiting, or a diſpoſition to vomit after eating, excited by the above-mentioned cough, is a moſt certain ſign of a phthiſis. In the firſt ſtage of a conſumption, when the patient is afflicted with a continual cough, eſpecially in the night time, the defluxion upon the lungs is to be ſtopped by bleeding, by repeated draughts of oxymel of ſquills and oil of ſweet almonds, of each an ounce, to be taken in large draughts of poſſet-drink; after which an opiate, made of two ounces of the ſimple alexiterial water, half an ounce of ſimple cinnamon-water, and ſix drams of the ſyrup of poppies, will be proper; or the patient may take ſix or ten of the ſtorax pills. It will alſo be convenient to carry down the impurities by ſtool, with a gentle cathartic. Diaphoretics likewiſe are not to be neglected; nor muſt thoſe remedies that ſoften, lubricate, thicken, and concoct the phlegm be omitted; as ſugar-candy, barly-ſugar, old conſerve of roſes, liquorice-juice, the white and black troches of the London-diſpenſatory, freſh butter in water gruel, oil of ſweet almonds, and eſpecially linſeed oil cold drawn, of which the patient may take a ſpoonful every hour, unleſs there is a diarrhœa, or other ſymptom that forbids it. He may alſo eat raiſins and figs, and uſe the other medicines commonly preſcribed for coughs. See *Cough*.

In the ſecond ſtage, when the vomica is formed, but not ſuppurated, evacuations of all kinds are pernicious. The patient ſhould continue the uſe of the pectoral medicines, and eſpecially the balſamic pills, milk-diet, and the chalybeate-waters; of which he ſhould drink only four, or at moſt ſix pints in a day, and a little at a time: and this courſe ſhould be continued for ſeveral years.

But whether a milk diet be uſed alone, or mixed with mineral waters, Hoffman thinks it highly neceſſary to attend to the following particulars: 1. We ought diligently to enquire whether the ſtrength of the ſtomach is ſufficient to digeſt and again expel this ſpecies of medicine. 2. It is expedient that, before the uſe of the milk, the primæ viæ ſhould be well cleanſed from viſcid and acid humours; which intention is moſt effectually anſwered by a laxative infuſion of manna, whoſe virtue is augmented by adding a ſufficient quantity of tartar. 3. On the firſt days, it is expedient every morning about ſix or ſeven, and every afternoon, about five o'clock, to drink ſix or eight ounces of women's or aſſes-milk, and afterwards gradually to increaſe the quantity. 4. After the patient has for ſix or eight days drank the milk in this manner, a gentle laxative medicine, and ſuch as has a tendency to evacuate the ſordes, is to be interpoſed and repeated every ſixth day. 5. He ought never to uſe wine or malt-liquors for drink, but rather ptiſans of barley, hartſhorn, and citron-peel. He muſt alſo carefully abſtain from aliments of hard digeſtion, and ſuch as generate bad juices. On the contrary, broth prepared of tortoiſes, cray-fiſh, veal, fowls, lettuce, and garden ſuccory, are of ſingular ſervice. 6. In order to augment the concoctive force of the ſtomach, which in a phthiſis is very languid, it is expedient between meals to exhibit ſome balſamic pectoral, and ſtomachic elixir, ſuch as that made of the beſt myrrh, ſaffron, nutmegs, orange-peel, marſh-trefoil, and liquorice root

As to the pectoral and vulnerary balſams, the forms recommended by the moſt celebrated phyſicians, are, according to the ſame author, the following ones

Take of the oil of St. John's wort, two ounces; of ſperma-ceti, ſix drachms; of the beſt Venice-turpentine, three drachms; of dragon's blood, one drachm; and of laudanum opiatum, ſix grains: mix all together, and let the doſe be from one to two drachms.

Nor, ſays he, have I found the following balſam leſs efficacious: take of the oil of ſweet almonds, two ounces: and of the flowers of ſulphur, ſublimed by quick-lime, two drachms: boil over a gentle fire; then add of the balſam capivi, one drachm; of ſperma ceti and bees-wax, each half an ounce; of the extract of ſaffron, half a drachm; and of the oils of aniſe, fennel, and mace, each ten drops.

Another balſam for anſwering the ſame end may be prepared thus. Take of the beſt Pruſſian honey and mountain-diacodium, each one ounce; of the aqueous eſſence of myrrh inſpiſſated, half an ounce; of the flowers of ſulphur, and the extract of the tops of yarrow, each two drachms; of the extract of ſaffron, half a drachm; and of the oils of mace and ſaſſafras-wood, each eight drops.

Theſe noble and efficacious balſams, when their uſe is indicated, cannot be exhibited in a better or more proper vehicle, than a ſufficient quantity of the milk of aſſes, goats, or cows.

In colliquative ſweats, Morton recommends the free uſe of pearl-julep; to which may be added chalk, coral, dragon's blood, or other abſorbents: the patient ſhould not be allowed to ſleep too long, and the bed-cloths ſhould be lighter.

* PHYLLIS, in fabulous hiſtory, was the daughter of Lycurgus, king of Thrace. Demophoon, the ſon of Theſeus, on his return from the ſiege of Troy, was entertained at her father's palace; where they becoming paſſionately in love with each other, ſhe granted him the laſt favour, on his promiſing to return to marry her, after he had ſettled his affairs in his own country; but ſtaying beyond the ſtipulated time, Phyllis became diſtracted at the thoughts of being ſlighted, and went to hang herſelf; when the gods pitying her, changed her into an almond-tree that bore no leaves. But Demophoon returning, and hearing the fate of his miſtreſs, embraced the tree, which inſtantly ſhot forth leaves, as an expreſſion of her being ſtill ſenſible of his fondneſs.

PHYSIC, the ſame with medicine.

PHYSICAL, ſomething relating to nature.

PHYSICIAN, a perſon who profeſſes medicine, or the art of healing diſeaſes.

For an account of the college of phyſicians in London, ſee *College*.

PHYSICS, a denomination ſometimes given to natural philoſophy. See *Natural Philoſophy*.

PHYSIOGNOMONICS, among phyſicians, ſuch ſigns as being taken from the countenance, ſerve to indicate the ſtate, diſpoſition, &c. both of the body and mind: and hence the art of reducing theſe ſigns to practice is termed phyſiognomy, than which nothing can be more precarious, as it reſpects the characters of people, accuſtomed by education and practice to diſſemble their ſentiments.

PHYSIOLOGY, a diſcourſe of nature, and natural bodies; or, it is that part of natural philoſophy which treats of the various phænomena of nature in a ſcientifical and ſpeculative way; in which ſenſe, neither chemiſtry nor experimental philoſophy are included under it.

PIA MATER, in anatomy, the third tunic or membrane of the brain, placed immediately under the tunica arachnoides, and cloſely and firmly connected to the brain: it not only extends over the whole ſurface of the brain, but inſinuates itſelf into all its cavities, and is carried down to the bottom of all its furrows. It covers alſo the ſpinal marrow, and all the nerves, and adheres alſo to the tunica arachnoides very cloſely and firmly, in the upper part of the head; but much leſs ſo below, with the dura mater.

PIAZZA, in building, a portico, or covered walk, ſupported by arches.

PICA, in medicine, a depravation of appetite, which makes the patient long for what is unfit for food, or incapable of nouriſhing, as chalk, aſhes, coals, plaſter, lime, &c.

PICA, the name of a type uſed by Printers, of the following ſize:

“ Modern Dictionary of “ Arts and Sciences.”

PICAGE, or Piccage, an ancient cuſtom or duty paid at fairs and markets, for breaking the ground, and pitching up ſtalls or ſtandings.

PICKLE, a brine or liquor, commonly compoſed of ſalt, vinegar, &c. ſometimes with the addition of ſpices, wherein meat, fruit, and other things are preſerved and ſeaſoned. The ſame name is alſo given to any vegetable production prepared in pickle.

PICTURE, a piece of painting, or a ſubject repreſented in colours, on wood, canvas, paper, or the like.

PIECE, in commerce, ſignifies ſometimes a whole, and ſometimes a part of the whole. In the firſt ſenſe, we ſay a piece of cloth or velvet, &c. meaning a certain quantity of yards regulated by cuſtom; being yet entire, and not cut. In the other ſignification, we ſay a piece of tapeſtry, meaning a diſtinct member wrought a-part, which with ſeveral others, make one hanging.

Piece, in matters of money, ſignifies ſometimes the ſame thing with ſpecies; and ſometimes by adding the value of the pieces, it is uſed to expreſs ſuch as have no other particular name, as an eighteen ſhilling piece, &c.

Piece, in heraldry, denotes an ordinary or charge.

Pieces, in the military art, all ſorts of great guns and mortars. Battering pieces are the larger ſort of guns uſed at ſieges for making the breaches; ſuch are the twenty-four pounders, and culverine, the one carrying twenty-four, and the other an eighteen pound ball. Field-pieces are twelve-pounders, demi-culverines, ſix-pounders, ſakers, minions, and three-pounders, which march with the army, and encamp always behind the ſecond line, but in the day of battle are in the front. A ſoldier's firelock is likewiſe called his piece.

* PIEDMONT, a principality of Italy, at the foot of the Alps, is bounded on the North by Vallois, on the Eaſt by the duchies of Milan and Montferrat, on the South by the territory of Genoa and the county of Nice, and on the Weſt by France and the Alps. It is one of the moſt fruitful and pleaſant provinces in Italy, and is about 175 miles in length, and 40 in breadth. It abounds in corn, wine, fruits, cheeſe, hemp, flax, and metals, butcher's meat, and game of all ſorts. The chief religion is the Roman Catholic. Turin is the capital city. The vallies of Piedmont, which lie between France and Italy, are inhabited by the Vaudois, who profeſs the proteſtant religion, if it may be ſo called; for ſome maintain, that it is clear from hiſtory that they have always profeſſed the ſame religion from the firſt eſtabliſhment of chriſtianity in theſe parts. Towards the end of the laſt century, the French king prevailed on the duke of Savoy to drive theſe people out of the country; in conſequence of which 20,000 people retired into Germany, Holland, and England. There are ſtill, however, a great many of them left, but they are obliged to have a Roman Catholic church in every pariſh.

PIEPOWDER Court, or Pie-poudre, or Pedes Pulverisati; a court held in fairs for doing juſtice to buyers and ſellers, and redreſſing diſorders there committed. It is ſo called, as being moſt uſually held in the ſummer, when the ſuitors to the court have duſty feet, &c. This is a court of record, incident to every fair, and is to be held only during the time the fair is kept.

PIER, or Peer, in building, a maſs of ſtone, &c. oppoſed by way of fortreſs againſt the force of the ſea, or a great river, for the ſecurity of ſhips that lie at harbour in any haven.

It is alſo uſed in architecture for a kind of pilaſter, or buttreſs, raiſed for ſupport, ſtrength, and ſometimes for ornament.

PIERCED, Perce', in heraldry, is when any ordinary is perforated, or ſtruck through, ſhewing, as it were, a hole in it, which muſt be expreſſed in blazon, as to its ſhape: thus if a croſs have a ſquare hole or perforation in the center, it is blazoned ſquare-pierced, which is more proper than quarterly-pierced, as Leigh expreſſes it.

PIG, in zoology, the young of the hog kind.

PIGEON, in ornithology. See *Columba*.

There are two kinds of pigeons, the wild and the tame; the latter differ from the former only in bigneſs and familiarity: the wild uſually perch upon trees, being ſeldom ſeen on the ground. Pigeons are of various ſorts, ſuch as carriers, powters, runts, turbets, &c. There are two ſeaſons when you may eaſily procure a ſufficient ſtock of pigeons, viz. May and Auguſt: for at theſe ſeaſons there are a great number of young pigeons, which may then be purchaſed very reaſonably.

Pigeon House, a houſe erected full of holes within for the keeping, breeding, &c. of pigeons, otherwiſe called a dove-cote. Any lord of a manor may build a pigeon-houſe on his land, but a tenant cannot do it without the lord's licence. When perſons ſhoot at or kill pigeons within a certain diſtance of the pigeon-houſe, they are liable to pay a forfeiture.

In order to erect a pigeon-houſe to advantage, it will be neceſſary to pitch upon a convenient ſituation, of which none is more proper than the middle of a ſpacious court-yard, becauſe pigeons are naturally of a timorous diſpoſition, and the leaſt noiſe they hear frightens them. With regard to the ſize of the pigeon-houſe, it muſt depend intirely upon the number intended to be kept; and as to its form, the round ſhould be preferred to the ſquare ones; becauſe rats cannot ſo eaſily come at them in the former as in the latter. It is alſo much more commodious; becauſe you may, by means of a ladder turning upon an axis, eaſily viſit all the neſts in the houſe, without the leaſt difficulty; which cannot ſo eaſily be done in a ſquare houſe. In order to hinder rats from climbing up the outſide of the pigeon-houſe, the walls ſhould be covered with tin plates to a certain height; about a foot and a half will be ſufficient; but they ſhould project out three or four inches at the top, to prevent their clambering any higher. The pigeon-houſe ſhould be placed at no great diſtance from water, that the pigeons may carry it to their young ones; and their carrying it in their bills will warm it, and render it more wholeſome in cold weather. The boards that cover the pigeon-houſe ſhould be well joined together, ſo that no rain may penetrate through it. And the whole building ſhould be covered with hard plaſter, and white-waſhed within and without, white being the moſt pleaſing colour to pigeons. There muſt be no window, or other opening, in the pigeon-houſe to the eaſtward: theſe ſhould always face the ſouth, for pigeons are very fond of the ſun, eſpecially in winter. The neſts or covers in a pigeon-houſe, ſhould conſiſt of ſquare holes made in the walls, of a ſize ſufficient to admit the cock and hen to ſtand in them. The firſt range of theſe neſts ſhould not be leſs than four feet from the ground, that the wall underneath being ſmooth, the rats may not be able to reach them. Theſe neſts ſhould be placed in quincunx order, and not directly over one another. Nor muſt they be continued any higher than within three feet of the top of the wall: and the upper row ſhould be covered with a board projecting a conſiderable diſtance from the wall, for fear the rats ſhould find means to climb the outſide of the houſe.

PIKE, an offenſive weapon, conſiſting of a ſhaft of wood, twelve or fourteen feet long, headed with a flat-pointed ſteel, called the ſpear. The pike was a long time in uſe among the infantry, but now the bayonet, which fixes on at the end of the carabine, is ſubſtituted in its place: yet the pike ſtill continues the weapon of foot-officers, who fight pike in hand, ſalute with the pike, &c.

Pike, in icthyology, the ſame with lucius.

PILASTER, in architecture, a ſquare column, ſometimes inſulated, but more frequently let within a wall, and only ſhewing a fourth or fifth part of its thickneſs. The pilaſter is different in different orders; it borrows the name of each; and has the ſame proportions, and the ſame capitals, members, and ornaments, with the columns themſelves. Pilaſters are, however, uſually made without either ſwelling or diminution, and as broad at top as at the bottom; though ſome of the modern architects, as M. Manſard, &c. diminiſh them at the top, and even make them ſwell in the middle, like columns, particularly when placed behind columns. Mr. Perrault obſerves, that pilaſters, like columns, become of different kinds, according to the different manner in which they are applied to the wall. Some are wholly detached, and theſe Vitruvius calls paraſtatæ: others have three faces clear out of the wall; others two; and others only one; theſe Vitruvius calls antæ. Inſulate pilaſters are but rarely found in the antique; or the chief uſe the ancients made of them, was to give the greater ſtrength to the extremities of porticoes.

There are four things to be principally regarded in pilaſters; their projecture out of the wall; their diminution; the diſpoſition of the entablature, when it happens to be common to them and to a column; and their flutings and capitals. 1. Then the projecture of pilaſters that have only one face out of the wall, ought to be one-eighth of their breadth, or at moſt one-ſixth; but when they receive impoſts againſt their ſides, the projecture may be a quarter of their diameter. 2. Pilaſters are ſeldom diminiſhed when they have only one face out of the wall: indeed

deed when they ſtand in the ſame line with columns, and the entablature is continued over both, without any break, the pilaſters are to have the ſame dimenſions with the columns. 3. Pilaſters are ſometimes fluted, though the columns that accompany them are not ſo; and on the contrary, the columns are ſometimes fluted, when the pilaſters that accompany them are not. The flutings of pilaſters are always odd in number, except in half pilaſters, which meet at inward angles, where four flutings are made for three, &c. 4. The proportions of the capitals of pilaſters, are the ſame as to height with thoſe of columns; but they differ in breadth, the leaves of pilaſters being much broader; becauſe pilaſters, though of equal extent, have only the ſame number of leaves for their girt, viz. eight. Their uſual diſpoſition is to have two in each face in the lower row, one in the middle, and two halves in the angles, in the turns of which they meet. Add to this, that the rim of the vaſe, or tambour, is not ſtraight, as the lower part is; but a little circular and prominent in the middle. See *Flutings*.

In pilaſters that ſupport arches, the proportions, according to Palladio, ſhould be regulated by the light they are placed in; and at the angles by the weight they are to ſuſtain: they muſt not be too tall and ſlender, leſt they reſemble pillars, nor too dwarfiſh and groſs, leſt they appear like the piers of bridges. In private buildings they ought not to be narrower than one third, nor broader than two thirds of the vacuity, or interſpace between pilaſter and pilaſter; but as for thoſe that ſtand at the corners, they may have a little more latitude allowed them, to give the greater ſtrength to the angles. Palladio obſerves, that in the theatres and amphitheatres, and ſuch maſſive works, they have been as broad as the half, and ſometimes as the whole vacuity or interſpace. He alſo aſſerts, that their true proportion ſhould be an exact ſquare; but for leſſening of expence, they are uſually made narrower in flank than in front.

PILCHARD, *Pilchardus*, in ichthyology, a ſpecies of clupea, with the upper jaw bifid, and ſpotted on each ſide with black.

PILE, in antiquity, a pyramid built of wood, on which the bodies of the deceaſed were laid in order to be burnt.

PILE, in building, a large ſtake rammed into the ground in the bottom of rivers, or in marſhy land, for a foundation to build on.

PILE is uſed among architects for a maſs of building.

PILE, in heraldry, an ordinary in form of a wedge, contracting from the chief, and terminating in a point towards the bottom of the ſhield.

PILES, in medicine. See *Hæmorrhodis*.

PILGRIMAGE, a kind of religious diſcipline, which conſiſts in taking a journey to ſome holy place, to adore the relics of ſome deceaſed ſaint. Pilgrimages began to be made about the middle ages of the church; but they were moſt in vogue after the end of the eleventh century, when every one was for viſiting places of devotion, not excepting kings and princes themſelves; and even biſhops made no difficulty of being abſent from their churches on the ſame account. The places moſt viſited were Jeruſalem, Rome, Compoſtella, and Tours; but the greateſt numbers now reſort to Loretto, to viſit the chamber of the bleſſed Virgin, in which ſhe was born, and brought up her ſon Jeſus, till he was twelve years of age. This chamber, it is pretended, was carried by angels into Dalmatia, about the year 1291, and afterwards in the ſame manner tranſported to Loretto, where a magnificent cathedral is built over it. In this chamber is the image of the bleſſed Virgin, almoſt covered with pearls and diamonds, and round the ſtatue is a kind of rainbow formed of precious ſtones of various colours. Five hundred thouſand pilgrims ſometimes reſort to this houſe in one year, to pay their devotions before this glorious image.

* PILKINGTON, Lætitia, a lady diſtinguiſhed by her poetical talents, was the daughter of Dr. Van Lewen, an eminent phyſician of Dutch extraction, who ſettled in Dublin, in which city ſhe was born in the year 1712. She had early a ſtrong inclination to letters, and when ſhe grew up had ſo ſurpriſing a memory, that ſhe could repeat by heart almoſt all the poems of our moſt celebrated modern poets. She was married young to the Reverend Mr. Matthew Pilkington, a gentleman known in the poetical world by his volume of Miſcellanies, reviſed by Dean Swift; but his jealouſy occaſioned continual diſcontents. Mr. Pilkington came to London to ſerve as chaplain to the lord mayor; while he continued there,

he wrote her a very affectionate letter, in which he praiſed her poetry, and informed her that Mr. Pope, to whom he had ſhewn her verſes, longed to ſee the author, and that he himſelf heartily wiſhed her in London; upon which ſhe accepted the invitation, and returned with her huſband to Ireland; but ſoon after, Mr. Pilkington entertaining freſh ſuſpicions of her fidelity, they ſeparated. She afterwards returned to England, and ſettled in London, where becoming known to Colley Cibber, ſhe, by this means lived on the contributions of the great; but theſe reſourſes failing, ſhe was arreſted for debt, and confined in the Marſhalſea priſon; where, after lying nine months, ſhe was releaſed by Mr. Cibber, who ſolicited charities for her. She afterwards took a little ſhop in St. James's-ſtreet, where ſhe ſold pamphlets and prints, where by the liberality of the great, and their generouſly ſubſcribing to her memoirs, ſhe lived for ſome time above want. At length ſhe returned to Dublin, where ſhe printed the firſt volume of her Memoirs in octavo, through which are ſcattered many beautiful pieces of poetry. On this occaſion, ſhe received many handſome preſents from the perſons of diſtinction who bought her book; and as ſhe had been very ſevere in drawing characters of thoſe who had not ſhewn themſelves her friends, many others now endeavoured to diſarm her ſatire and conciliate her eſteem, that they might not be mentioned in an unfavourable light in her ſecond and third volumes, which were afterwards publiſhed. After living, without the leaſt œconomy, in a continual ſucceſſion of want and plenty, ſhe died at Dublin, Auguſt 29th 1750, in the 39th year of her age.

PILL, in pharmacy, a form of medicine reſembling a little ball, to be ſwallowed whole, invented in favour of ſuch as cannot take ill-taſted medicinal draughts, as alſo to keep in readineſs for occaſional uſe without deviating.

PILLAR, in architecture, a kind of irregular column, round and inſulated, but deviating from the proportions of our column.

Pillars are always either too maſſive, or too ſlender for regular architecture; ſuch are the pillars which ſupport Gothic vaults, or buildings; and, indeed, they are not reſtrained by any rules, their parts and proportions being arbitray.

Square PILLAR, a maſſive work, called alſo a pier, or piedroit, ſerving to ſupport arches, &c.

PILLORY, anciently a poſt erected in a croſs-road, by the lord of the manor, with his arms upon it, as a mark of his ſeigniory, and ſometimes with a collar to fix criminals to. At preſent, it is a wooden machine, to confine the head and hands, in order to expoſe criminals to public view, and to render them publicly infamous.

PILOT, one employed to conduct ſhips over bars and ſands, or through intricate channels, into a road or harbour.

PIMENTA, or PIMENTO, in the materia medica, Jamaica pepper, or allſpice, the dried aromatic berry of a large tree growing in the mountainous parts of Jamaica, reckoned a ſpecies of myrtle, and called by Sir Hans Slone, *myrtus arborea aromatica foliis laurinis*; by Linnæus, *myrtus foliis alternis*.

Pimenta is a moderately warm ſpice, of an agreeable flavour, ſomewhat reſembling that of a mixture of cloves, cinnamon, and nutmegs. Diſtilled with water it yields an elegant eſſential oil, ſo ponderous as to ſink in the aqueous fluid, in taſte moderately pungent, in ſmell and flavour approaching to oil of cloves, or rather a mixture of thoſe of cloves and nutmegs: the remaining decoction inſpiſſated, leaves an extract ſomewhat ungrateful, but not pungent, and the berry itſelf is found to be almoſt wholly deprived of its taſte as well as flavour; the warmth of this ſpice reſiding rather in the volatile than in the fixed parts.

This ſpice, at firſt brought over for dietetic uſes, has been long employed in the ſhops as a ſuccedaneum to the more coſtly oriental aromatics; from them it was introduced into our hoſpitals, and is now received both in the London and Edinburgh Pharmacopœias. The college of London directs a ſimple water to be diſtilled from it, in the proportion of a gallon from half a pound: this is ſtrongly impregnated with the flavour of the pimenta, though it is leſs elegant than the ſpirituous water which the ſhops have been accuſtomed to prepare, by drawing off two or three gallons of proof ſpirit from the ſame quantity of the ſpice. The eſſential oil does not ſeem to be much known in practice; though it promiſes to be a very uſeful one, and might, doubtleſs, on many occaſions, ſupply the place of many of the dearer oils. The quantity of oil afforded by the ſpice is very conſiderable: Cartheuſer indeed ſays, that only about half a dram is to be got from ſixteen ounces; a miſtake, which probably has ariſen from inadvertance in copying Neumann's proportion, of half a dram from an ounce, or one ſixteenth: ſo large a proportion as this laſt cannot, however, be collected in its proper form, the oil that remains diſſolved in the diſtilled water being here included.

PIMPLE, in ſurgery, a ſmall puſtule, ariſing chiefly on the face.

PIN, in commerce, a ſmall neceſſary implement made of braſs wire, uſed chiefly by the women in adjuſting their dreſs. The perfection of pins conſiſts in the ſtiffneſs of the wire and its whiteneſs, in the heads being well turned, and in the fineneſs of the points. The London pointing and whitening are in moſt repute, becauſe the London pin-makers, in pointing, uſe two ſteel mills, the firſt of which forms the point, and the latter takes off all irregularities, and renders it ſmooth, and as it were poliſhed; and in whitening, they uſe block tin granulated: whereas in other countries they are ſaid to uſe a mixture of tin, lead, and quickſilver; which not only whitens worſe than the former, but is alſo dangerous, on account of the ill quality of that mixture, which renders a puncture with a pin thus whitened, ſomewhat difficult to be cured. The conſumption of pins is incredible, and there is no commodity ſold cheaper. The number of hands employed in this manufacture is very great, each pin paſſing through the hands of ſix different workmen, between the drawing of the braſs wire, and the ſticking of the pin in the paper.

Pins are ſometimes made of iron-wire, rendered black by a varniſh of linſeed-oil, with lamp-black, which the braſs-wire would not receive: theſe are deſigned for the uſe of perſons in mourning, though not univerſally approved of.

PINCHING, in gardening, a kind of pruning, performed by nipping off the young and tender ſprings of trees and plants between the nails of the thumb and finger, chiefly practiſed in April or May, and ſometimes in June and July, on the large uſeleſs branches towards the top of a plant or tree, becauſe they conſume a great deal of the ſap. See *Pruning*.

* PINDAR, a celebrated Greek poet, and the prince of the Lyric poets, was born at Thebes, in Bœotia, about 500 years before the Chriſtian æra. He was at the higheſt point of his reputation, when Xerxes invaded Greece, and it is believed that he died about the 436th year before the Chriſtian æra. He was the author of a great number of poems of ſeveral kinds, but there have been none of them handed down to us except the odes he wrote upon thoſe who in his time had gained the prize at the four ſolemn Grecian games. There appears in Pindar's odes a grandeur, elevation, and ſtrength that is inexpreſſible. The rapidity of his diction is, in the opinion of Horace, like that of an impetuous torrent, which deſcends from the mountains, and carries all before it. Alexander had ſuch a veneration for the memory of this great poet, that at the deſtruction of Thebes, he, on his account, preſerved his houſe and family.

PINDARIC, in poetry, an ode in imitation of the manner of Pindar. The Pindaric manner is diſtinguiſhed by the boldneſs and height of the flights, the ſuddenneſs and ſurpriſingneſs of the tranſitions, and the ſeeming irregularity, wildneſs, and enthuſiaſm of the whole. The only part remaining of Pindar's works is a book of odes, all in praiſe of the victors at the Olympian, Pythian, Nemæan, and Iſthmian games; whence the firſt is intitled the Olympians, the ſecond the Pythians, the third the Nemæans, and the fourth the Iſthmians.

PINE, *Pinus*, in botany, a genus of trees, the male flowers of which are collected in a ſcaly conical bunch, having many ſtamina, which are connected at their baſe, terminated by erect ſummits, included in the ſcales, which ſupply the want of petals and empalement. The female flowers are collected in a common oval cone, and ſtand at a diſtance from the male on the ſame tree. Under each ſcale of the cone is produced two flowers, which have no petals, but a ſmall germen, ſupporting an awl-ſhaped ſtyle, crowned by a ſingle ſtigma. The germen afterwards becomes an oblong oval nut, crowned with a wing, included in the rigid ſcale of the cone.

There are various ſpecies of the pine-tree; but two only that deſerve cultivating; namely, the Scotch pine, and the white pine, commonly called in England lord Weymouth's, or New-England pine.

The Scotch pine, ſays Mr. Miller, ſo called from its growing naturally on the mountains of Scotland, is the tree that affords the red or yellow deal, which is the moſt durable of any of the kinds yet known. The leaves of this tree are pretty broad and ſhort, of a greyiſh colour, growing two out of each ſheath; the cones are ſmall, pyramidal, and end in narrow points; they are of a light colour, and the ſeeds are ſmall.

This ſort grows well almoſt upon every ſoil; I have planted numbers of the trees upon peat-bogs, where they have made great progreſs. I have alſo planted them in clay, where they have ſucceeded far beyond expectation; and upon ſand, gravel, and chalk, they likewiſe thrive as well; but as they do not grow near ſo faſt upon gravel and ſand as upon moiſt ground, ſo the wood is much preferable; for thoſe trees which have been cut down upon moiſt ſoils, where they have made the greateſt progreſs, when they have been ſawn out into boards, have not been valuable, the wood has been white, and of a looſe texture; whereas thoſe which have grown upon dry gravelly ground have proved nearly equal to the beſt foreign deals: and I doubt not but thoſe plantations, which of late years have been made of theſe trees, will, in the next age, not only turn greatly to the advantage of their poſſeſſors, but alſo become a national benefit.

The white pine is one of the talleſt trees of all the ſpecies, often growing a hundred feet high, as I have been credibly informed. The bark of this tree is very ſmooth and delicate, eſpecially when young; the leaves are long, and ſlender, five growing out of each ſheath; the branches are pretty cloſely garniſhed with them, ſo make a fine appearance; the cones are long, ſlender, and very looſe, opening with the firſt warmth of the ſpring; ſo that if they are not gathered in winter, the ſcales open and let out the ſeeds. The wood of this ſort is eſteemed for making of maſts for ſhips; it is in England called lord Weymouth's or New-England pine, as hath been already obſerved. As the wood of this tree was generally thought of great ſervice to the navy, there was a law made in the ninth year of queen Anne, for the preſervation of the trees, and to encourage their growth in America; and it is within forty years paſt theſe trees began to be propagated in England in any plenty, though there were ſome large trees of this ſort growing in two or three places long before, particularly at lord Weymouth's at Longleat, Sir Wyndham Knatchbull's in Kent; and it has been chiefly from the ſeeds of the latter that the much greater number of theſe trees now in England have been raiſed: for although there has annually been ſome of the ſeeds brought from America, yet thoſe have been few in compariſon to the produce of the trees in Kent; many of the trees which have been raiſed from the ſeeds of thoſe trees now produce plenty of good ſeeds, particularly thoſe in the gardens of the late duke of Argyle at Whitton, which annually produce large quantities of cones, which his grace, when living, moſt generouſly diſtributed to all the curious.

All the ſorts of pines are propagated by ſeeds, which are produced in hard woody cones; the way to get the ſeeds out of theſe cones, which are cloſe, is to lay them before a gentle fire, which will cauſe the cells to open, and then the ſeeds may be eaſily taken out. If the cones are kept entire, the ſeeds will remain good ſome years, ſo that the ſureſt way to preſerve them is to let them remain in the cones until the time for ſowing the ſeeds. If the cones are kept in a warm place in ſummer, they will open, and emit the ſeeds, but if they are not expoſed to much heat, many of the ſorts will remain entire ſome years; eſpecially thoſe which are cloſe and compact; and the ſeeds, which have been taken out of cones of ſeven years old, have grown very well, ſo that theſe may be tranſported to any diſtance, provided the cones are well ripened, and properly put up.

The beſt time for ſowing the ſeeds of pines is about the end of March: when the ſeeds are ſown, the place ſhould be covered with nets to keep off birds, otherwiſe, when the plants begin to appear with the huſk of the ſeed on their tops, the birds will pick off the heads of the plants, and deſtroy them.

Wherever large plantations are deſigned to be made, the beſt method will be to raiſe the plants either upon a part of the ſame land, or as near to the place as poſſible, and alſo upon the ſame ſort of ſoil; a ſmall piece of ground will be ſufficient to raiſe plants enough for many acres; but, as the plants require ſome care in their firſt raiſing, if the neighbouring cottagers, who have many of them ſmall incloſures adjoining to their cottages; or, where this is wanting, a ſmall incloſure ſhould be made them for the purpoſe of raiſing the plants, and they be furniſhed with the ſeeds and directions for ſowing them, and managing the young plants, till they are fit for tranſplanting, the women and children may be uſefully employed in this work, and the proprietors of land agreeing with them to take their plants, when raiſed, at a certain price, it would be a great benefit to the poor, and hereby they would be engaged to have a regard for the plantations when made, and prevent their being deſtroyed.

The Scotch pine, as was before obſerved, being the hardieſt of all the kinds, and the wood of it the moſt uſeful, is the ſort which beſt deſerves care. This will thrive upon the moſt barren ſands, where ſcarce any thing elſe, except heath and furze, will grow; ſo that there are many thouſand acres of ſuch land lying convenient for water carriage, which at preſent is of little benefit to any body, that might, by plantations of theſe trees, become good eſtates to their proprietors, and alſo a national benefit; and as the legiſlators have taken this into their conſideration, and already paſſed ſome laws for the encouraging theſe plantations, as alſo for their preſervation and ſecurity; ſo it may be hoped that this will be undertaken by the gentlemen who are poſſeſſed of ſuch lands in all the different parts of the kingdom, with proper ſpirit; for although they may not expect to receive much profit from theſe plantations in their own time, yet their ſucceſſors may with large intereſt, and the pleaſure which theſe growing trees will afford them, by beautifying the preſent dreary parts of the country, will in ſome meaſure recompenſe them for their trouble and expence, and by creating employment for the poor, leſſen thoſe rates which are now, in many parts of England, ſcarce to be borne.

The expence of making theſe plantations is what moſt people are afraid of, ſo would not engage in it; but the greateſt of the expence is that of fencing them from the cattle, &c. for the other is trifling, as there will be no neceſſity for preparing the ground to receive the plants, and the charge of planting an acre of land with theſe plants will not be more than thirty ſhillings where labour is dear, excluſive of the plants, which may be valued at forty ſhillings more. I have planted many acres of land with theſe trees, which was covered with heath and furze, and have only dug holes between to put in the plants, and afterward laid the heath or furze, which was cut, upon the ſurface of the ground about their roots, to prevent the ground drying, and few of the plants have failed. Theſe plants were moſt of them four years old from ſeed, nor was there any care taken to clean the ground afterward, but the whole left to ſhift, and in five or ſix years the pines have grown ſo well, as to over-power the heath and furze, and deſtroy it.

The diſtance which I have generally planted theſe plants in all large open ſituations, was about four feet, but always irregular, avoiding planting in rows as much as poſſible; and in the planting, the great care is not to take up the plants faſter than they can be planted; ſo that ſome men have been employed in digging up the plants, while others were planting. Thoſe who take up the plants, muſt be looked after to ſee they do not tear off their roots; or wound their bark; and as faſt as they are taken up, the roots ſhould be covered to prevent their drying, and put into their new quarters as ſoon as poſſible. In planting them, care ſhould be had to make the holes large enough for their roots, as alſo to looſen and break the clods of earth, and put the fineſt immediately about their roots, then to ſettle the earth gently with the foot to the roots of the plant. If theſe things are duly obſerved, and a proper ſeaſon choſen for performing it, there will be very little hazard of their ſucceeding; but I have ſeen ſome plantations made with plants, which were brought from a great diſtance, and had been ſo cloſely packed up, as to cauſe a heat, whereby moſt of the plants within had their leaves changed yellow, and few of them have grown, which has diſcouraged others from planting, not knowing the true cauſe of their failure.

After the plantations are made, the only care they require for five or ſix years, will be to ſecure the plants from cattle, hares, and rabbits; for if theſe are admitted to them, they will make great deſtruction in a ſhort time, for if the branches are gnawed by hares or rabbits, it will greatly retard the growth of the plants, if not deſtroy them.

In about five or ſix years after planting, the branches of the young trees will have met, and begin to interfere with each other, therefore they will require a little pruning; but this muſt be done with great caution. The lower tier of branches only ſhould be cut off; this ſhould be performed in September, at which time there will be no danger of the wounds bleeding too much, and the turpentine will harden over the wounds as the ſeaſon grows cold, ſo will prevent the wet from penetrating them. Theſe branches ſhould be cut off cloſe to the ſtem of the plants, and care ſhould be taken in the doing of this, not to break any of the remaining branches of the young trees. This work ſhould be repeated every other year, at each time taking off only the lower tier of branches; for if the plants are much trimmed, it will greatly retard their growth, as it does in general that of all trees; but as theſe trees never put out any new ſhoots where they are pruned, ſo they ſuffer more from amputation than thoſe which do

In about twelve or fourteen years theſe will require no more pruning, for their upper branches will kill thoſe below where they have not air; but ſoon after this, if the plants have made good progreſs, it may be neceſſary to thin them; but this ſhould be gradually performed, beginning in the middle of the plantation firſt, leaving the outſide cloſe to ſcreen thoſe within from the cold, ſo by degrees coming to them at laſt, whereby thoſe, which were firſt thinned, will have had time to get ſtrength, ſo will not be in danger of ſuffering from the admiſſion of cold air. When theſe plantations are thinned, the trees ſhould not be dug up; but their ſtems cut off cloſe to the ground, for the roots never ſhoot again, but decay in the earth, ſo there can no harm ariſe by leaving them, and hereby the roots of the remaining plants are not injured. The trees which are now cut, will be fit for many purpoſes; thoſe which are ſtraight, will make good putlocks for the bricklayers, and ſerve for ſcaffolding poles, ſo that there may be as much made by the ſale of theſe, as will defray the whole expence of the planting, and probably intereſt for the money into the bargain.

As the upright growth of theſe trees renders their wood the more valuable, they ſhould be left pretty cloſe together, whereby they will draw each other up, and grow very tall. I have ſeen ſome of theſe trees growing, whoſe naked ſtems have been more than ſeventy feet high, and as ſtraight as a walking cane, and from one of theſe trees there were as many boards ſawed, as laid the floor of a room near twenty feet ſquare. If theſe trees are left eight feet aſunder each way, it will be ſufficient room for their growth; therefore, if at the firſt thinning a fourth part of the trees are taken away, the other may ſtand twelve or fourteen years longer, by which time they will be of a ſize for making ladders, and ſtandards for ſcaffolding, and many other purpoſes: ſo that from this ſale, as much may be made, as to not only pay the remaining part of the expence of planting, if any ſhould be wanting in the firſt, but rent for the land with intereſt, and the ſtanding trees for fortunes of younger children. This may be demonſtrated by figures, and there has been ſeveral examples of late years, where the profits have greatly exceeded what is here mentioned. *Miller's Garden. Dict.*

Pitch, tar, reſin, and turpentine, are all made from theſe trees by a very familiar proceſs. In the ſpring time, when the ſap is moſt free in running, they pare off the bark of the pine-tree, to make the ſap run down into a hole which they cut at the bottom to receive it: in the way, as it runs down, it leaves a white matter like cream, but a little thicker; this is very different from all the kinds of reſin and turpentine in uſe, and it is generally ſold to be uſed in the making of flambeaux, inſtead of white bees wax. The matter that is received in the hole at the bottom, is taken up with ladles, and put in a large baſket; a great part of this immediately runs through, and this is the common turpentine. This is received into ſtone, or earthen pots, and is ready for ſale. The thicker matter, which remains in the baſket, they put into a common alembic, adding a large quantity of water; they diſtil this as long as any oil is ſeen ſwimming upon the water; this oil they ſeparate from the ſurface in large quantities, and this is the common oil or ſpirit of turpentine: the remaining matter, at the bottom of the ſtill, is common yellow reſin. When they have thus obtained all that they can from the ſap of the tree, they cut it down, and, hewing the wood into billets, they fill a pit dug in the earth with theſe billets, and, ſetting them on fire, there runs from them while they are burning, a black thick matter; this naturally falls to the bottom of the pit, and this is the tar. The top of the pit is covered with tiles, to keep in the heat; and there is at the bottom a little hole, out at which the tar runs like oil: if this hole be made too large, it ſets the whole quantity,

tity of the tar on fire; but, if ſmall enough, it runs quietly out.

The tar, being thus made, is put up in barrels, and, if it be to be made into pitch, they put it into large boiling veſſels, without adding any thing to it: it is then ſuffered to boil a while, and, being then let out, is found, when cold, to be what we call pitch. *Phil. Tranſ.* Nº 243.

PINE-APPLE, the ſame with ananas. See *Ananas.*

PINEAL GLAND, in anatomy, a gland in the third ventricle of the brain, thus called from its reſemblance to a pine-apple. It is of a greyiſh colour, and its proceſſus and baſe are often medullary: this gland has often by many been ſuppoſed the peculiar ſeat of the ſoul.

PINION, in mechanics, an arbor, or ſpindle, in the body of which are ſeveral notches, which catch the teeth of a wheel that ſerves to turn it round; or it is a leſſer wheel which plays in the teeth of a larger.

PINK, *Caryophillus*, in botany, the Engliſh name of ſeveral ſpecies of the dianthus. See *Dianthus.*

PINNACE, among ſeamen, a ſmall veſſel with two maſts, uſed in the coaſting trade, particularly in Newfoundland, and other parts of North-America: alſo the name of a particular kind of boat commonly rowed with eight oars.

PINNATED LEAVES, *pinnata folia*, in botany, leaves formed in manner of a wing, and compoſed of two large ranges, or ſeries of foliola, annexed to the two ſides of one common, oblong petal.

PINNING, in building, the faſtening of tiles together, with pins of heart of oak, for the covering of an houſe, &c.

PINT, a veſſel, or meaſure uſed in eſtimating the quantity of liquids, and even ſometimes of dry things.

PIONEER, in the art of war, a labourer employed in an army to ſmooth the roads, paſs the artillery along, and dig lines and trenches, mines, and other works.

PIP, or PEP, *Pepia*, a diſeaſe among poultry, conſiſting of a white thin ſkin, or film, that grows under the tip of the tongue, and hinders their feeding. It uſually ariſes from want of water, or from the drinking puddle-water, or eating filthy meat. It is cured by pulling off the film with the fingers, and rubbing the tongue with ſalt. Hawks are particularly liable to this diſeaſe, eſpecially from feeding on ſtinking fleſh.

PIPE, in building, &c. a canal, or conduit, for the conveyance of water and other liquids. Pipes for water, water-engines, &c. are uſually of lead, iron, earth, or wood: the latter are uſually made of elm or elder. Thoſe of iron are caſt in forges; their uſual length is about two feet and a half; ſeveral of theſe are commonly faſtened together by means of four ſcrews at each end, with leather or old hat between them, to ſtop the water. Thoſe of earth are made by the potters; theſe are fitted into one another, one end being always made wider than the other. To join them the cloſer, and prevent their breaking, they are covered with tow and pitch: their length is uſually about that of the iron pipes. The wooden pipes are trees bored with large iron augres, of different ſizes, beginning with a leſs, and then proceeding with a larger ſucceſſively; the firſt being pointed, the reſt being formed like ſpoons, increaſing in diameter, from one to ſix inches or more: they are fitted into the extremities of each other.

Leaden pipes are of two ſorts, the one ſoldered, the other not.

Tobacco-PIPE, a machine uſed in the ſmoaking of tobacco, conſiſting of a long tube, made of earth or clay, having at one end a little caſe, or furnace, called the bowl, for the reception of the tobacco, the fumes whereof are drawn by the mouth through the other end. Tobacco-pipes are made of various faſhions; long, ſhort, plain, worked, white, varniſhed, unvarniſhed, and of various colours, &c. The Turks uſe pipes three or four feet long, made of ruſhes, or of wood bored, at the end whereof they fix a kind of a pot of baked earth, which ſerves as a bowl, and which they take off after ſmoaking.

PIPE, a veſſel meaſure for wine, and things meaſured by wine-meaſure.

PIRATE, PYRATE, or ROVER, *Pirata*, a perſon, or veſſel that robs on the high ſeas, without permiſſion or authority of any prince or ſtate. When a pirate enters into any port or haven, and there robs a merchant's ſhip, this is not piracy, becauſe it is not done on the high ſea; but it is a robbery at the common law. In caſe a ſhip is riding at anchor on the ſea, and it happens that the mariners or ſeamen are part in their boat, and the reſt on ſhore, by which accident none are left in the ſhip; here, if a pirate ſhall attack her, and commit a robbery, it is piracy. Nevertheleſs, the taking, by a ſhip at ſea, in great neceſſity of victuals, cables, ropes, &c. ſuch things out of another veſſel, is not ſo, where that other veſſel can ſpare ſuch things, and the takers pay or give ſecurity for them. The manner of trying a pirate is by a ſpecial commiſſion, directed to the lord high admiral, &c. and the offence of piracy may be heard and determined, as if the robbery was committed on land; and offenders ſhall ſuffer the like pains of death, loſs of lands and goods, &c. Perſons combining to yield up ſhips to pirates, or to lay violent hands on the commanders of ſhips, or that correſpond with any pirate, are adjudged guilty of piracy.

* PISA, an ancient, large, handſome, and ſtrong city of Italy, in Tuſcany, and capital of the Piſano, with an univerſity, an archbiſhop's ſee, and three forts. The territory, though very ſmall, is enriched with ſeveral fine productions; there is curious marble, good alabaſter, lapis lazuli, ultramarine, vitriol, and ſalt-works. The town is ſeated on the Arno, at a ſmall diſtance from the ſea, in a very fertile plain. That river runs through Piſa, and there are three bridges thereon, that in the middle being conſtructed with marble; on this bridge the inhabitants every year have a mock-fight, like that of Venice. The town is ſo thin of inhabitants, that graſs grows in the principal ſtreets. The cathedral is a magnificent ſtructure, and on the right ſide of the choir is the leaning tower, ſo much talked of. In the great ſquare, before St. Stephen's church, is a white marble ſtatue, repreſenting duke Coſmo the Great. The grand duke's palace, and the magnificent exchange, are worth taking notice of. It is 10 miles N. of Leghorn, and 10 S. W. of Lucca. Long 10. 24 E. Lat. 43. 42. N.

PISCES, in aſtronomy, the twelfth ſign or conſtellation of the zodiac. The ſtars in Piſces, in Ptolemy's catalogue, are 38; in Tycho's 33; and in the Britannic catalogue, 109.

PISCIS VOLANS, in aſtronomy, a ſmall conſtellation of the ſouthern hemiſphere, unknown to the ancients, and inviſible to us in theſe northern regions.

PISSASPHALTUM, earth-pitch, in natural hiſtory, a fluid, opake, mineral body, of a thick conſiſtence, of a ſtrong ſmell, readily inflammable, but leaving a reſiduum of greyiſh aſhes, after burning. It ariſes out of the cracks of rocks, in ſeveral places in the iſland of Sumatra, and in ſome other parts of the Eaſt-Indies, and is much eſteemed there, in paralytic diſorders. It is greatly recommended by the ancients as an emollient, maturant, and digeſtive, and was uſed in cataplaſms for ripening all ſorts of tumours, and againſt the ſciatica, and other pains of the limbs.

PISSELÆUM INDICUM, Barbadoes tar, in natural hiſtory, a mineral fluid, of the nature of the thick bitumens, and of all others the moſt approaching, in appearance, colour, and conſiſtence, to the true piſſaſphaltum, though differing from it in other reſpects. It is very frequent in many parts of America, where it is found trickling down the ſides of mountains in large quantities, and ſometimes floating on the ſurface of the waters: but it ſeems to be almoſt loſt at this time in the iſland of Barbadoes, from whence it was originally named. It has been greatly recommended internally in coughs and other diſorders of the breaſt and lungs; but it is ſeldom to be met with genuine.

PISTACHIA, in botany, a genus of plants, whoſe fruit is an oblong, pointed nut, about the ſize of a filberd; including a kernel of a pale greeniſh colour, covered with a reddiſh ſkin. It is the produce of a large tree, with winged leaves reſembling thoſe of the aſh, which grows ſpontaneouſly in the Eaſtern countries, and bears the cold of our own. Piſtachia nuts have a pleaſant ſweetiſh unctous taſte, reſembling that of ſweet almonds; their principal difference from which conſiſts in their having rather a greater degree of ſweetneſs, accompanied with a light grateful flavour: and in being more oily, and hence ſomewhat more emollient, and perhaps more nutritious. They have been ranked among the principal analeptics, and greatly eſteemed by ſome in certain weakneſſes and emaciations. They are taken chiefly in ſubſtance, their greeniſh hue rendering them unſightly, in the form of an emulſion. They are very liable to grow rancid in keeping.

PISTIL, among botaniſts, the female organ of generation in plants: it conſiſts of three parts, the germen, ſtyle, and ſtigma: the germen ſupplies the place of an uterus in plants, and is of various ſhapes, but always ſituated at the bottom of the piſtil, and contains the embryo-ſeeds: the ſtyle is a part of various forms alſo, but always placed on the germen: and the ſtigma is alſo of various figures, but always placed on the top of the ſtyle, or, if that be wanting, on the top of the germen.

PISTOL, the ſmalleſt piece of fire-arms, borne at the ſaddle-bow, on the girdle, and in the pocket.

PISTOLE, a gold coin ſtruck in Spain, and in ſeveral parts of Italy, Switzerland, &c.

PISTON, *Embolus*, in pump-work, a ſhort cylinder of metal, or other ſolid ſubſtance, fitted exactly to the cavity of the barrel or body of the pump. See *Pump*.

PISUM, pea, in botany, a genus of plants, producing papilionaceous flowers; the vexillum is broad, heart-ſhaped, reflexed, emarginated, and ending in a point; the alæ are roundiſh, connivent, and ſhorter than the vexillum; the carina is compreſſed, ſemilunulated, and ſhorter than the alæ; the fruit is a large, long, unilocular, and bivalve pod, containing ſeveral globoſe ſeeds. The ſtalks of the pea plant are long, hollow, and of a ſea-green colour; the leaves are oblong, and of the ſame colour; and ſome are ſo placed that the ſtalks ſeem to run through them, while others grow by pairs on the ribs, that are terminated by tendrils, which lay hold of every thing they meet with. The common white pea ſucceeds beſt in a light land, ſomewhat rich; the time of ſowing them is in the middle of April. Three buſhels are the common allowance for an acre; and they kill the weeds the land is ſubject to, better than any other crop. In Staffordſhire they ſow the garden rouncivals in fields, and they grow and yield very well, though they are left trailing upon the ground without any ſupport of ſticks. The white and rouncival peaſe are only to be ſown with a broad caſt, and harrowed in; but the common grey pea, which is more frequently ſown in fields than either of them, muſt be ſown under furrow, and delights moſt in a cold wet clay. Theſe are to be ſown in February; and the common quantity of ſeed is two buſhels to an acre. The blue pea is the beſt kind for light ſandy land, and is to be early ſown; all peaſe love land manured with lime or with marle. In Suffolk they plow up their lays in the beginning of March, and, turning the turf well, they have a croſs ſtick ſet with iron pegs, which they ſtrike down with their feet: theſe pegs make holes at equal diſtances; into which they have boys and girls following to drop the peaſe ſingly, till all the land is ſet. As ſoon as this crop is cut, they plow the land acroſs, and harrowing it well, they plow it again, and ſow it about Michaelmas with wheat, and the next year with barley, then with oats; after which the land requires new improvement. *Mortimer's Huſbandry*.

PITCH, a tenacious oily ſubſtance, drawn chiefly from pines and firs, and uſed in ſhipping, medicine, and various other arts: or it is more properly tar, inſpiſſated by boiling it over a ſlow fire.

PITCHING, in naval affairs, the act of plunging or falling headlong into a ſea, when the wave, by which the ſhip's fore-part is lifted up, is ſuddenly withdrawn from under the prow. Pitching is often extremely dangerous to a veſſel, as it ſtrains both the hull and the maſts to a great degree, and frequently carries away the latter by a violent jerk.

PITH, in vegitation, the ſoft ſpongy ſubſtance in the central parts of plants and trees. As the ſubſtance of the trunk in trees, ſays Boerhaave, become more woody, the pith is compreſſed, and ſtraitened to ſuch a degree, that it wholly diſappears. It is plain from this, that the office of the pith, in vegetation, cannot be very great, ſince it is not of perpetual duration. By its ſpongy ſtructure, it ſeems fitted to receive any ſuperfluous moiſture that might tranſude through the pores of the woody fibres. If by ſuch moiſture, or from any other cauſe, it happens to rot and periſh, as frequently happens in elms, the tree is found to grow full as well without it; a proof it is of no eſſential uſe in vegetation.

PITUITARY GLAND, in anatomy, a gland in the brain, of the ſize of a very large pea.

PIVAT, or PIVOT, a foot or ſhoe of iron, or other metal, uſually conical, or terminating in a point, whereby a body, intended to turn round, bears on another fixed at reſt, and performs its circumvolutions. The pivot uſually bears or turns round in a ſole, or piece of iron or braſs, hollowed to receive it.

PLACARD, or PLACART, among foreigners, ſignifies a leaf or ſheet of paper, ſtretched out and applied on a wall or poſt, containing edicts, regulations, &c.

PLACE, *Locus*, in philoſophy, a mode of ſpace, or that part of immoveable ſpace which any body poſſeſſes. See *Space*.

Place is to ſpace or expanſion, ſays Mr. Locke, as time is to duration. Our idea of place is nothing but the relative poſition of any thing with reference to its diſtance from ſome fixed and certain points. Whence we ſay, that a thing has or has not changed place, when its diſtance either is or is not altered with reſpect to thoſe bodies with which we have occaſion to compare it. That this is ſo, continues that great philoſopher, we may eaſily gather from hence, that we have no idea of the place of the univerſe, though we can of all its parts. To ſay that the world is ſomewhere, means no more than it does exiſt: however, the word place is ſometimes taken to ſignify that ſpace which any body takes up; and in this ſenſe, according to the ſame author, the univerſe may be conceived in a place; but he thinks that this portion of infinite ſpace poſſeſſed by the material world, might more properly be called extenſion.

The place of the ſun, ſtar, &c. denotes the ſign and degree of the zodiac which the luminary is in; or the degree of the ecliptic, reckoning from the beginning of Aries, which the planet or ſtar's circle of longitude cuts; and therefore coincides with the longitude of the ſun, planet, or ſtar. As the ſine of the ſun's greateſt declination 23° 30′: to the ſine of any preſent declination given or obſerved, for inſtance, 23° 15′ : : ſo is the radius 10 : to the ſine of his longitude 81° 52′; which, if the declination were north, would give 20° 52′ of Gemini; if ſouth, 20° 52′ of Capricorn for the ſun's place. See *Declination*, &c.

The place of the moon being that part of her orbit wherein ſhe is found at any time, is of various kinds, on account of the great inequalities of the lunar motions, which render a number of equations and reductions neceſſary before the juſt point be found. The moon's fictitious place is her place once equated; her place nearly true, is her place twice equated; and her true place is her place thrice equated. See *Moon*.

PLACENTA, in anatomy, a ſoft roundiſh maſs found in the womb of pregnant women; which, from its reſemblance to the liver, was called by the ancients hepar uterinum, the uterine liver. The number of placentæ in human ſubjects, anſwers to that of the fœtuſes; and as theſe are uſually ſingle, the placenta is uſually ſo too; but when there are two or more fœtuſes, there are always as many placentæ; yet in this caſe they often cohere together ſo as to ſeem but one, but even in this caſe, their veſſels do not communicate from one to the other.

The uſe of the placenta is, together with the chorion, to abſorb the nutritious juices from the mother's uterus, as the inteſtines do the chyle; and finally to tranſmit it to the fœtus, by means of the umbilical veins. And it probably ſerves to refund again to the parent, the blood and urine of the fœtus, by the umbilical arteries.

PLAFOND, or PIAFOUND, in architecture, the ceiling of a room, whether it be flat or arched, lined with plaſter or joiner's work, and frequently enriched with painting.

PLAGIARY, in philology, the purloining another perſon's works, and putting them off for a man's own.

PLAGUE, a moſt acute fever, ariſing from a poiſonous miaſma, brought from Oriental countries, which unleſs it is immediately expelled out of the body, by the ſtrength of the vital motions, by buboes and carbuncles, proves fatal. In this, as well as in moſt contagious diſeaſes, ſays Hoffman, the venomous miaſma is ſwallowed with the air, and inſinuates itſelf into the ſalival juice; whence it aſſaults the head, brain, nerves, and animal ſpirits; producing a torpor in the head, a heavineſs, a ſleepineſs, a violent pain, a ſtupor of the ſenſes, a forgetfulneſs, inquietude, watching, and loſs of ſtrength. From the fauces it proceeds to the ſtomach, creating a loathing of food, nauſeas, anxiety of the precordia, cardialgia attended with fainting, reaching to vomit, and vomiting itſelf. Hence it proceeds to the membranes of the ſpinal marrow, the coats of the arteries, producing horrors, a languid, ſmall, contracted, quick pulſe, and even fainting. All which are generally ſigns and ſymptoms of the plague, which are of a more violent and quick operation in proportion to the virulence of the peſtilential miaſma. This diſeaſe differs from other contagious, malignant, and eruptive fevers, becauſe it is the moſt acute, and ſometimes kills on the firſt, and ſometimes on the ſecond day. In our climate it is not epidemic or ſporadic, from a bad way of living, or an unhealthful air, but happens when it is moſt ſalutary, from contagion alone, and is imported from hot countries where this diſeaſe rages. It will not only abate by intenſe cold, but be perfectly extinguiſhed: wherefore in a cold ſeaſon and very cold countries, it either does not appear at all, or in a very mild degree; whereas if the climate is hot, it is not only moſt violent, but moſt common.

All plagues are not of the ſame nature, but vary according to different conſtitutions and circumſtances; but all who have written of the plague univerſally agree, that ſpongy and porous bodies, of an obeſe habit, of a ſanguine and phlegmatico-ſanguine conſtitution, women, young perſons and children, perſons of a timid diſpoſition, that are poor, live hard, or are given to luxury, and ſit up late at night, are more apt to be afflicted with this diſeaſe than the ſtrong and intrepid, lean, nervous, endued with large veſſels, men, old perſons obnoxious to the hæmorrhoidal flux, and who have iſſues and open ulcers. Nothing brings on this diſtemp r ſooner than fear, a dread of death, and a conſternation of the mind. If the peſtilential poiſon is not expelled to the external parts, it is certainly fatal; nor is this to be done, according to Hoffman, as in other fevers, by large ſweats, by ſtools, by a flux of urine, by bleeding at the noſe, either natural or artificial; for theſe threaten deſtruction. The ſalutary and critical excretion which perfectly ſolves the peſtilential diſeaſe is by tumours in the ſurface of the body, not otherwiſe than the eryſpelas, between the third and fourth day, and the ſooner the better, becauſe then the ſymptoms are mitigated. That there is poiſon contained in theſe tumours appears from hence, that if the ſurgeon opens any of the tumours with his lancet, and then bleeds a ſound man with the ſame, he will be immediately ſeized with the plague.

PLAIN, *Planus*, whatever is ſmooth and even, or ſimple, obvious, and eaſy to be underſtood; and, conſequently, ſtands oppoſed to rough, enriched, or laboured.

A plain figure, in geometry, is an uniform ſurface; from every point of whoſe perimeter, right lines may be drawn to every other point in the ſame.

A plain angle is one contained under two lines, or ſurfaces, in contradiſtinction to a ſolid angle. See *Angle*.

The doctrine of plain triangles, as thoſe included under three right lines, is termed plain trigonometry. See *Trigonometry*.

PLAIN *Sailing*. See *Sailing*.

PLAIN *Table*, in geometry, &c. an inſtrument uſed in the ſurveying of lands, whereby the plan is taken on the ſpot, without any future protraction.

PLAIN *Problem*, in mathematics, ſuch a problem as cannot be ſolved geometrically, but by the interſection either of a right line and a circle, or of the circumferences of two circles; as, given the greateſt ſide, and the ſum of the other two ſides of a right angled triangle, to find the triangle, as alſo to deſcribe a trapezium that ſhall make a given area of four given lines. Such problems can only have two ſolutions, in regard a right line can only cut a circle, or one circle cut another in two points.

PLAINT, in law, the exhibiting any action, real or perſonal, in writing. See *Action*.

PLAISE, the Engliſh name of a ſpecies of the pleuronectes, with ſmooth ſides, a ſpine near the anus, and the eyes and ſix tubercles placed on the right ſide of the head: it is ſomewhat larger than the flounder.

PLAN, the repreſentation of ſomething drawn on a plane: ſuch are maps, charts, ichnographies, &c. The term plan, however, is particularly uſed for a draught of a building, ſuch as it appears, or is intended to appear, on the ground; ſhewing the extent, diviſion, and diſtribution of its area, or ground-plot, into apartments, rooms, paſſages, &c.

A geometrical plan is that wherein the ſolid and vacant parts are repreſented in their natural proportions.

The raiſed plan of a building is the ſame with what is otherwiſe called an elevation or orthography.

A perſpective plan is that exhibited by degradations, or diminutions, according to the rules of perſpective.

To render plans intelligible, it is uſual to diſtinguiſh the maſſives with a back waſh; the projectures on the ground are drawn in full lines, and thoſe ſuppoſed over them in dotted lines. The augmentations, or alterations to be made, are diſtinguiſhed by a colour different from what is already built; and the tints of each plan made lighter, as the ſtories are raiſed.

In large buildings, it is uſual to have three ſeveral plans, for the three firſt ſtories.

PLANE, *Planum*, in geometry, a plain ſurface, or one that lies evenly between its bounding lines: and as a right line is the ſhorteſt extenſion from one point to another, ſo a plane ſurface is the ſhorteſt extenſion from one line to another. In aſtronomy, conics, &c. the term plane is frequently uſed for an imaginary ſurface, ſuppoſed to cut and paſs through ſolid bodies; and on this foundation, is the whole doctrine of conic ſections built. In mechanics, planes are either horizontal, that is, parallel to the horizon, or inclined thereto.

The determining how far any given plane deviates from an horizontal one, makes the whole buſineſs of levelling. In optics, the planes of reflection and refraction are thoſe drawn through the incident and reflected or refracted rays. The plane of the horopter is that drawn through the horopter, perpendicularly to the plane of the two optical axes. See *Horopter*.

In perſpective, we meet with the perſpective plane, which is ſuppoſed to be pellucid, and perpendicular to the horizon; the horizon plane, ſuppoſed to paſs through the ſpectator's eye, parallel to the horizon; the geometrical plane, likewiſe parallel to the horizon, whereon the object to be repreſented is ſuppoſed to be placed, &c.

The plane of projection, in the ſtereographic projection of the ſphere, is that on which the projection is made; correſponding to the perſpective plane.

PLANE, in joinery, an edge-tool to ſhave wood ſmooth and even.

PLANET, *Planeta*, in aſtronomy, a celeſtial body revolving round the ſun as a center, and changing its poſition with reſpect to the fixed ſtars. The planets are uſually diſtinguiſhed into primary and ſecondary.

Primary PLANETS, thoſe which move round the ſun as a center, and are by way of eminence, uſually called planets.

Secondary PLANETS, or ſatellites, ſuch as move round ſome primary planet, as their reſpective center, in the ſame manner as the primary planets do round the ſun. The primary planets are ſix in number, viz. Saturn, Jupiter, Mars, the Earth, Venus, and Mercury. Of theſe the firſt three are called ſuperior planets, becauſe their orbits circumſcribe that of the earth; and the two laſt inferior planets, becauſe their orbits are circumſcribed by the orbit of the earth. The order, poſition, magnitude, &c. of the planets are repreſented in plate XLII.

From the ſeveral phaſes and appearances of the planets, they are found to be all perfectly like the moon, that is, opake bodies, and borrow all their light from the ſun.

This will plainly appear from the following particulars: 1. Venus, obſerved with a teleſcope, is rarely found full, but with variable phaſes like thoſe of the moon, her illuminated part ſtill turned towards the eaſt, when ſhe is the morning ſtar, and weſt, when the evening ſtar. And the like phaſes have been obſerved of Mars and Mercury.

2. Gaſſendus firſt, and after him others, have obſerved Mercury on the face of the ſun, acroſs which he appeared to paſs like a black round ſpot. Horrox, in 1639, alſo obſerved Venus in the ſun, where ſhe made the ſame appearance.

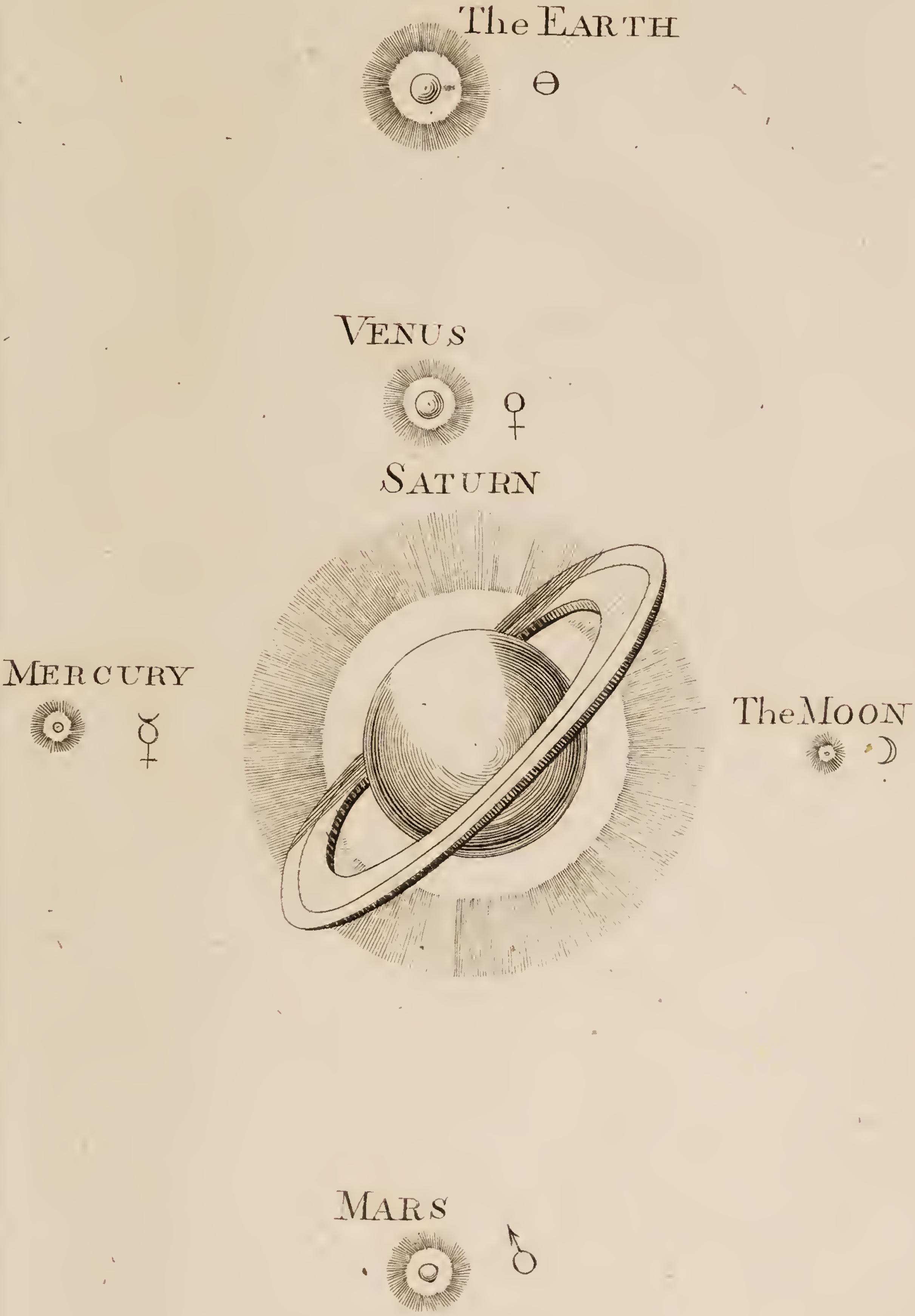
3. De la Hire, in 1700, with a teleſcope of ſixteen feet, diſcovered mountains in Venus, larger than thoſe of the moon.

4. Caſſini obſerved two ſpots in Venus; four in Mars, likewiſe obſerved by Campani; and ſeveral, at ſeveral times, in Jupiter: and from his obſervations of theſe ſpots found that they had a rotation round their axes: he even determined the velocity of that rotation, or the period wherein it was effected, v. gr. that of Jupiter 9 hours 56′; that of Mars, 24 hours 40′; and that of Venus 24 hours. And ſince the ſun, moon, Jupiter, Mars, Venus, and the Earth, are found to revolve on their axes, i. e. to have a diurnal rotation, no doubt Mercury and Saturn have the ſame; though the great nearneſs of the former to the ſun, and the great diſtance of the latter, prevent any ſpots from being obſerved on them, whence that rotation might be demonſtrated.

5. In Jupiter are obſerved two ſwaths, or belts, brighter than the reſt of his diſk, and moveable; ſometimes found in one part, ſometimes in another; ſometimes broader, ſometimes narrower.

6. In 1609, were firſt obſerved three little ſtars, or moons, moving about Jupiter, by Sim. Marius; and in 1610 the ſame were obſerved by Galileo: theſe are now frequently obſerved to diſappear in a clear ſky, when Jupiter happens to be diametrically interpoſed between them and the ſun. Whence it appears they are void of light, at ſuch time when the

late. XLII. *facing Planet.*



ſun's rays, intercepted by Jupiter, cannot be propagated to them in right lines; and hence alſo, that, like the moon, they are opake bodies, illuminated by the ſun; and hence again, ſince Jupiter does not illuminate his ſatellites when placed behind, he himſelf in that part turned from the ſun, may be argued to be void of light.

7. When Jupiter's moons are diametrically interpoſed between Jupiter and the ſun, there is ſeen a round ſpot on Jupiter's diſk, which is ſometimes larger than the ſatellite itſelf. Whence it appears, that the ſatellites are opake bodies, illuminated by the ſun; that they project a ſhadow upon the planet, and that the round ſpots ſeen in Jupiter are the ſhadows of the ſatellites. Whence alſo, the interſection of that ſhadow being found to be a circle, the ſhadow muſt be conical; and therefore the figure of the ſatellites, at leaſt as to ſenſe, is ſpherical.

8. The earth being between Jupiter and the ſun, if, at the ſame time, any of the ſatellites happen to be between Jupiter and the ſun, it is loſt in Jupiter's light, though ſometimes appearing like a black ſpot. This phænomenon has been frequently obſerved by Caſſini and Maraldi, who have likewiſe noted very conſiderable alterations in the apparent magnitudes of the ſatellites; for which no reaſon could be given from the diſtance of Jupiter, the ſun, or the earth: e. gr. That the fourth, which is uſually ſeen the ſmalleſt, is ſometimes the largeſt, and the third, which is uſually the largeſt, ſometimes the ſmalleſt. Hence, as the ſatellites are illuminated by the ſun, even then when emerged in Jupiter's light, yet appear obſcure, there muſt be ſome alteration in their atmoſpheres, to prevent the ſun's rays being equally reflected from every part of their ſurface; which muſt likewiſe be the cauſe why their ſhadow is ſometimes larger than themſelves.

Now, to ſum up the evidence. — 1. Since in Venus, Mercury, and Mars, only that part of the diſk illuminated by the ſun is found to ſhine; and, again, Venus and Mercury, when between the earth and the ſun, appear like dark ſpots or maculæ on the ſun's diſk; it is evident, that Mars, Jupiter, and Mercury, are opake bodies, illuminated with the borrowed light of the ſun. And the ſame appears of Jupiter, from its being void of light in that part to which the ſhadow of the ſatellites reaches, as well as in that part turned from the ſun; and that his ſatellites are opake, and reflect the ſun's light, is abundantly ſhewn. Wherefore, ſince Saturn, with his ring and ſatellites, only yield a faint light, fainter conſiderably than that of the fixed ſtars, though theſe be vaſtly more remote; and than that of the reſt of the planets: it is paſt doubt, he too, with his attendants, are opake bodies.

2. Since the ſun's light is not tranſmitted through Mercury and Venus, when placed againſt him, it is plain they are denſe opake bodies; which is likewiſe evident of Jupiter, from his hiding the ſatellites in his ſhadow; and therefore, by analogy, the ſame may be concluded of Saturn.

3. From the variable ſpots in Venus, Mars, and Jupiter, it is evident thoſe planets have a changeable atmoſphere; which changeable atmoſphere may, by a like argument, be inferred of the ſattellites of Jupiter, and therefore by ſimilitude the ſame may be concluded of the other planets.

4. In like manner, from the mountains obſerved in Venus, the ſame may be ſuppoſed in the other planets.

5. Since then Saturn, Jupiter, both their ſatellites, Mars, Venus, and Mercury, are opake bodies, ſhining with the ſun's borrowed light, are furniſhed with mountains, and encompaſſed with a changeable atmoſphere; they have, of conſequence, waters, ſeas, &c. as well as dry land, and are bodies like the moon, and therefore like the earth.

And hence nothing hinders but that the planets may alſo be concluded to be inhabited. Huygens, in his Coſmotheoros, argues very plauſibly for the exiſtence of planetary inhabitants, from the ſimilitude of the planets with our earth; thoſe, like this, being opake, denſe, uneven, round, heavy, illuminated and warmed by the ſun; having night and day, ſummer and winter, &c.

Wolfius deduces ſomething relating hereto from arguments of another kind. Thus, e. gr. it is ſcarce to be doubted, that the inhabitants of Jupiter are much larger than thoſe of the earth; and, in effect, of the giant kind. For it is ſhewn in optics, that the pupil of the eye contracts in a ſtrong light, and dilates in a weak one; wherefore, since in Jupiter the ſun's meridian light is much feebler than on the earth, by reaſon of Jupiter's greater diſtance from the ſun; the pupil will need to be much more dilatable in the inhabitants of Jupiter, than in thoſe of the earth. But the pupil is obſerved to have a conſtant proportion to the ball of the eye, and the eye to the reſt of the body; ſo that, in animals, the larger the pupil, the larger the eye and the larger the body.

In the Copernican ſyſtem, the proportion between the ſemi-diameters of the planetary orbits, or between the diſtances of the ſeveral planets from the ſun, is found by trigonometry; ſo that if the diſtance of any one of them, as for inſtance, if the diſtance of the earth from the ſun be given, the diſtances of all the reſt of the planets from the ſun may be found: in any of the ſuperior planets, the ratio its diſtance from the ſun bears to the diſtance of the earth from the ſun is known, by meaſuring the angle of the planet's retrogradation.

We have hitherto conſidered the phænomena of the heavenly bodies without regard to the accurate form of their orbits, which is not circular, but elliptical; yet that it is very little ſo, even in the moſt excentric orbit, as that of Mercury, will appear by comparing their excentricities with their mean diſtances from the ſun. Thus, ſuppoſe the mean diſtance of the earth from the ſun be divided into 1000 equal parts, then in thoſe parts we have,

In
Merc. CS : DS :: 80 : 387 :: 1 : 4,84
Venus CS : DS :: 5 : 723 :: 1 : 144,6
Earth CS : DS :: 17 : 1000 :: 1 : 19
Mars CS : DS :: 141 : 1524 :: 1 : 10,8
Jupit. CS : DS :: 250 : 5201 :: 1 : 20,8
Satur. CS : DS :: 547 : 9538 :: 1 : 17,4

That the earth's orbit is elliptical, is well known from common experience; for were the orbit circular, the ſun's apparent diameter would always be the ſame; but we find it is not, for if it be meaſured with a micrometer in winter-time, it will be found conſiderably larger than in the ſummer, and it will be greateſt of all when the ſun is in the 8° of ♑ (which ſhews that is the place of the aphelium) it being then 32′ 47″; whereas, when the ſun is in the 8° of ♋, his diameter is but 31′ 40″.

Hence it is evident that the ſun is really nearer to us in the midſt of winter than in the midſt of ſummer; but this ſeems a paradox to many, who think the ſun muſt needs be hotteſt when it is neareſt to us, and that the ſun is apparently more diſtant from us in December than in June. As to the ſun's being hotter, it is true, it is ſo to all thoſe places which receive his rays directly or perpendicularly, but we find his heat abated on account of the obliquity of the rays, and his ſhort continuance above the horizon at that time. And as to his diſtance, it is only with reſpect to the zenith of the place, not the center of the earth; ſince it is plain, the ſun may approach the center of the earth, at the ſame time that it recedes from the zenith of any place.

Agreeable to the ſun's nearer diſtance in the winter, we obſerve his apparent motion is then quicker than in ſummer; for in the 8° of ♑ it is about 61′ per day, but in the 8° of ♋ his motion is but 57′ per day. Accordingly, we find the ſummer half-year eight days longer than the winter half-year, as appears by the following computation, according to the new ſtyle.

In March	10½ days.	In Sept.	07 days.
April	30	Octob.	31
May	31	Nov.	30
June	30	Dec.	31
July	31	Jan.	31
Aug.	31	Feb.	28
Sept.	23	March	20½
	186½		178½
	178½		

Difference 8 days.

For the ſun's attracting force being one part of the cauſe of the planet's motion, and this force always increaſing and decreaſing in the inverſe ratio of the ſquares of the diſtances, it is evident the velocity of the planet will always be greater the nearer it is to the ſun, and *vice verſa*.

Yet is this unequal motion of a planet regulated by a certain immutable law, from which it never varies, which is, that a line, drawn from the center of the ſun to the center of the planet, does ſo move with the planet about the ſun, that it deſcribes elliptic areas always proportional to the times.

PLANETARIUM, an aſtronomical machine, repreſenting the motions, orbits, &c. of the planets, agreeably to the Copernican ſyſtem. The planetarium is more generally known by the name orrery, and therefore we have given its deſcription and uſe under that article. See *Orrery*.

PLANETARY, relating to the planets.

nets. Thus we meet with planetary days, hours, years, ſyſtems, &c.

PLANIMETRY, that part of geometry which conſiders lines and plain figures, without conſidering their height or depth.

PLANISPHERE, a projection of the ſphere and its various circles on a plane; in which ſenſe maps, wherein are exhibited the meridians, and other circles of the ſphere, are planiſpheres.

PLANISPHERE is more particulary uſed for an aſtronomical inſtrument uſed in obſerving the motions of the heavenly bodies. It conſiſts of a projection of the celeſtial ſphere upon a plane, repreſenting the ſtars, conſtellations, &c. in their proper order; ſome being projected on the meridian, and others on the equator.

PLANT, *planta*, an organical body, deſtitute of ſenſe and ſpontaneous motion, adhering to another body in ſuch a manner as to draw from it its nouriſhment, and having power of propagating itſelf by ſeeds. The parts of which a plant conſiſts are, the root, ſtalk, leaf, flower, and fruit. Plant and vegetable are terms almoſt ſynonymous, every plant being a vegetable. Dr. Boerhaave defines a vegetable to be a body generated of the earth, or ſomething ariſing of the earth, to which it adheres or is connected by parts called roots, through which it receives the matter of its nouriſhment and increaſe; and conſiſts of juices and veſſels ſenſibly diſtinct from each other: or, a vegetable is an organical body, compoſed of veſſels and juices every where diſtinguiſhable from each other; to which body grow roots or parts, whereto it adheres, and from which it derives the matter of its life and growth. This definition furniſhes a juſt and adequate idea of a vegetable; for by its conſiſting of diſtinct veſſels and juices, it is diſtinguiſhed from a foſſile; and by its adhering to another body, from which it derives its nouriſhment, and being deſtitute of ſenſation, it is ſufficiently diſtinguiſhed from an animal. The veſſels, or containing parts of plants, conſiſt chiefly of earth, bound or connected together by oil, as a gluten; which being exhauſted by fire, air, age, or the like, the plant moulders, or returns again into its earth or duſt; but it muſt be owned, that water, air, ſalt, and ſulphur, or oil, are likewiſe conſtituent parts of plants, ſince they can be all obtained by a well managed analyſis. The root, or part whereby plants are connected to their matrix, and by which they receive their nutritious juice, conſiſts of an infinite number of abſorbent veſſels, which being diſperſed through the interſtices of the earth, attract or imbibe the juices of the ſame; conſequently every thing in the earth that is diſſoluble in water is liable to be imbibed, as air, ſalt, oil, and fumes of minerals, metals, &c. and of theſe plants do really conſiſt. See *Root*.

The motion of theſe nutritious juices is not unlike that of the blood in animals, being effected by the action of the air. The diſcovery of this we owe to the admirable Malpighi, who firſt obſerved, that plants conſiſt of two ſeries or orders of veſſels: 1. Such as receive and diſtribute the alimentary juices, anſwering to the arteries, lacteals, veins, &c. of animals. 2. The tracheæ, or air-veſſels, which are long hollow pipes, wherein air is commonly received and expelled; that is, inſpired and expired. Hence it follows, that the heat of the ſun muſt have a ſtrong effect on the air included in theſe tracheæ; whence ariſes a perpetual ſpring of action, to promote the circulation of the juices in plants.

For the botanical diſtribution of plants into claſſes, genera, &c. ſee the articles *Botany*, *Genus*, &c.

Foſſile PLANTS, thoſe plants found buried in the earth, and lodged in almoſt all the kinds of ſtrata, or ſubſtances, to be met with there.

PLANTAIN, *Plantago*, in botany, a plant, the root, leaves, and ſeeds of which are uſed in medicine, and reckoned cooling and aſtringent; being much recommended in fluxes of all kinds, particularly hæmorrhages, whether from the noſe, mouth, or uterus. It is likewiſe accounted a great healer of freſh wounds.

Ribwort, and bucks-horn plantain, are two ſpecies of, and agree with plantain in virtues.

PLANTATION, in the Weſt Indies, denotes a ſpot of ground which a planter, or perſon arrived in a new colony, pitches on to cultivate for his own uſe, or is aſſigned for that purpoſe. Plantation is often uſed in a ſynonymous ſenſe with colony.

PLANTING, in agriculture and gardening, is ſetting a tree or plant, taken from its proper place, in a new hole or pit; throwing freſh earth over its root, and filling up the hole to the level of the ſurface of the ground.

The firſt thing in planting, ſays Mr. Miller, is to prepare the ground before the trees or plants are taken out of the earth, that they may remain out of the ground as ſhort a time as poſſible; and the next is, to take up the trees or plants in order to their being tranſplanted. In taking up the trees, carefully dig away the earth round the roots, ſo as to come at their ſeveral parts to cut them off; for if they are torn out of the ground without care, the roots will be broken and bruiſed, to the great injury of the trees. When you have taken them up, the next thing is to prepare them for planting by pruning the roots and heads. And firſt, as to the roots; all the ſmall fibres are to be cut off, as near to the place from whence they are produced as may be, except they are to be replanted immediately after they are taken up. Then prune off all the bruiſed or broken roots, all ſuch as are irregular, and croſs each other, and all downright roots, eſpecially in fruit-trees: ſhorten the larger roots in proportion to the age, the ſtrength, and nature of the tree, obſerving that the walnut, mulberry, and ſome other tender-rooted kinds, ſhould not be pruned ſo cloſe as the more hardy ſorts of fruit and foreſt trees: in young fruit-trees, ſuch as pears, apples, plums, peaches, &c. that are one year old from the time of their budding and grafting, the roots may be left only about eight or nine inches long; but in older trees they muſt be left of a much greater lenght; but this is only to be underſtood of the larger roots, for the ſmall ones muſt be chiefly quite cut out, or pruned very ſhort. The next thing is the pruning of their heads, which muſt be differently performed in different times; and the deſign of the trees muſt alſo be conſidered: thus, if they are deſigned for walls or eſpaliers, it is beſt to plant them with the greateſt part of their heads, which ſhould remain on till they begin to ſhoot in the ſpring, when they muſt be cut down to five or ſix eyes, at the ſame time taking care not to diſturb the roots. But if the trees are deſigned for ſtandards, you ſhould prune off all the ſmall branches cloſe to the place where they are produced, as alſo the irregular ones, which croſs each other; and after having diſplaced theſe branches, you ſhould alſo cut off all ſuch parts of branches as have by any accident been broken or wounded; but by no means cut off the main leading ſhoots, which are neceſſary to attract the ſap from the root, and thereby promote the growth of the tree.

Having thus prepared the trees for planting, you muſt now proceed to place them in the earth; but firſt, if the trees have been long out of the ground, ſo that the fibres of the roots are dried, place them eight or ten hours in water, before they are planted, with their heads erect, and the roots only immerſed therein, which will ſwell the dried veſſels of the roots, and prepare them to imbibe nouriſhment from the earth. In planting them, great regard ſhould be had to the nature of the ſoil; for if that be cold and moiſt, the trees ſhould be planted very ſhallow; and if it be a hard rock or gravel, it will be better to raiſe a hill of earth where each tree is to be planted, than to dig into the rock or gravel, and fill it up with earth, as is too often practiſed, by which means the trees are planted, as it were, in a tub, and have but little room to extend their roots. The next thing to be obſerved is to place the trees in the hole in ſuch a manner that the roots may be about the ſame depth in the ground as before they were taken up: then break the earth fine with a ſpade, and ſcatter it into the hole, ſo that it may fall in between every root, that there may be no hollowneſs in the earth; then, having filled up the hole, gently tread down the earth with your feet, but do not make it too hard, which is a great fault, eſpecially if the ground be ſtrong or wet. Having thus planted the trees, they ſhould be faſtened to ſtakes driven into the ground, to prevent their being diſplaced by the wind, and ſome mulch laid on the ſurface of the ground about their roots: as to ſuch as are planted againſt walls, their roots ſhould be placed about five or ſix inches from the wall, to which their heads ſhould be nailed to prevent their being blown up by the wind. The ſeaſons for planting are various, according to the different ſorts of trees, or the ſoil in which they are planted: for the trees whoſe leaves fall off in winter, the beſt time is the beginning of October, provided the ſoil be dry; but if it be a very wet ſoil, it is better to defer it till the latter end of February, or the beginning of March; and for many kinds of evergreens, the beginning of April is by far the beſt ſeaſon; though they may be ſafely removed at Midſummer provided they are not to be carried very far; but you ſhould always make choice of a cloudy wet ſeaſon. *Miller's Gardener's Dict.*

PLASHING *of Quickſet-Hedges*, an operation very neceſſary to promote the growth and continuance of old hedges. It is performed in this manner: the old ſtubs muſt be cut off, &c. within two or three inches of the ground, and the beſt and longeſt of the middle ſized ſhoots left to lay down. Some of the ſtrongeſt of theſe muſt alſo be left to anſwer the purpoſe of ſtakes. Theſe are to be cut off to the height at which the hedge is intended to be left; and they are to ſtand at ten feet diſtance one from another: when there are not proper ſhoots for theſe at the due diſtances, their places muſt be ſupplied with common ſtakes of dead wood. The hedge is to be firſt thinned, by cutting away all but thoſe ſhoots which are intended to be uſed either as ſtakes, or the other work of the plaſhing: the ditch is to be cleaned out with the ſpade: and it muſt be now dug as at firſt, with ſloping ſides each way; and when there is any cavity on the bank on which the hedge grows, or the earth has been waſhed away from the roots of the ſhrubs, it is to be made good by facing it, as they expreſs it, with the mould dug from the upper part of the ditch: all the reſt of the earth dug out of the ditch is to be laid upon the top of the bank, and the owner ſhould look carefully into it that this be done; for the workmen, to ſpare themſelves trouble, are apt to throw as much as they can upon the face of the bank; which being by this means overloaded, is ſoon waſhed off into the ditch again, and a very great part of the work undone; whereas what is laid on the top of the bank always remains there, and makes a good fence of an indifferent hedge. In the plaſhing the quick, two extremes are to be avoided; theſe are, the laying it too low, and the laying it too thick: this makes the ſap run all into the ſhoots, and leaves the plaſhes without ſufficient nouriſhment; which, with the thickneſs of the hedge, finally kills them. The other extreme of laying them too high is equally to be avoided; for this carries up all the nouriſhment into the plaſhes, and ſo makes the ſhoots ſmall and weak at the bottom, and conſequently the hedge thin. A new hedge raiſed from ſets in the common way, generally requires plaſhing about eight or nine years after.

PLASTER, *Emplaſtrum*, in pharmacy, an external application, of a harder conſiſtence than our ointments: theſe are to be ſpread according to the different circumſtances of the wound, place, or patient, either upon linen or leather.

PLASTER, among builders, &c. The plaſter of Paris is a preparation of ſeveral ſpecies of gypſums, dug near Mont Maître, a village in the neighbourhood of Paris; whence the name. See *Gypſum*.

The beſt ſort is hard, white, ſhining, and marbly; known by the names of plaſter-ſtone, or parget of Mont Maître. It will neither give fire with ſteel, nor ferment with aqua-fortis, but very freely and readily calcines in the fire, into a very fine plaſter; the uſe of which in building and caſting ſtatues, is well known. See *Stucco*.

As the modern taſte runs greatly into plaſtering, it were to be wiſhed that this art could be brought to its ancient perfection. The plaſters of the Romans were exceeding durable; witneſs ſeveral yards of it ſtill to be found on the top of the Pont de Garde, near Niſmes. At Venice they uſe a very durable plaſter; but as the ſecret of preparing it is not known among us, it would be worth while to try whether ſuch a ſubſtance might not be made by boiling the powder of gypſum dry over the fire, for it will boil in the manner of water; and when this boiling or recalcining was over, the mixing with it reſin, or pitch, or both together, with common ſulphur, and the powder of ſea-ſhells. If theſe were all mixed together, and the water added to it hot, and the matter all kept hot upon the fire till the inſtant of its being uſed, ſo that it might be laid on hot, it is poſſible this ſecret might be hit upon. Wax and oil of turpentine may be alſo tried as additions; theſe being the common ingredients in ſuch cements as we have accounts of are the firmeſt. Strong ale-wort is by ſome directed to be uſed, inſtead of water, to make mortar of lime-ſtone be of a more than ordinary ſtrength. It is poſſible that the uſe of this tenaceous liquor in the powdered ingredients of this propoſed plaſter, might greatly add to their ſolidity and firmneſs.

PLASTIC, πλαστικὸς, denotes a thing endued with a formative power, or a faculty of forming and faſhioning a maſs of matter, after the likeneſs of a living being; ſuch a virtue as ſome of the ancient Epicureans, and perhaps the Peripatetics too, imagined to reſide in the earth, or, at leaſt, to have anciently reſided therein, by means whereof, and without any extraordinary intervention of a creaa creator, it put forth plants, &c. Some of them ſeem to be of opinion, that animals, and even man himſelf, was the effect of this plaſtic power.

PLASTICE, the Plastic Art, a branch of ſculpture, being the art of forming figures of men, birds, beaſts, fiſhes, &c. in plaſter, clay, ſtuc, or the like.

PLATE, in commerce, gold or ſilver wrought into veſſels, for domeſtic uſes.

PLATFORM, in the military art, an elevation of earth, on which cannon is placed, to fire on the enemy; ſuch are the mounts in the middle of curtains. On the rampart there is always a platform, where the cannon are mounted. It is made by the heaping up of earth on the rampart, or by an arrangement of madriers, riſing inſenſibly, for the cannon to roll on, either in a caſemate, or on attack in the outworks.

All practitioners are agreed, that no ſhot can be depended on, unleſs the piece can be placed on a ſolid platform; for if the platform ſhakes with the firſt impulſe of the powder, the piece muſt likewiſe ſhake, which will alter its direction, and render the ſhot uncertain.

PLATFORM, in architecture, a row of beams, which ſupport the timber-work of a roof, and lie on the top of the wall, where the entablature ought to be raiſed. This term is alſo uſed for a kind of terrace, or broad, ſmooth, open walk at the top of a building, from whence a fair proſpect may be taken of the adjacent country. Hence an edifice is ſaid to be covered with a platform, when it is flat at top and has no ridge. Moſt of the Oriental buildings are thus covered, as were all thoſe of the ancients.

PLATONIC, ſomething relating to Plato, his ſchool-philoſophy, opinions, or the like: thus, Platonic love denotes a pure ſpiritual affection, for which Plato was a great advocate, ſubſiſting between the different ſexes, abſtracted from all carnal appetites, and regarding no other object but the mind and its beauties: or it is even a ſincere diſintereſted friendſhip ſubſiſting between perſons of the ſame ſex, abſtracted from any ſelfiſh views, and regarding no other object than the perſon, if any ſuch love or friendſhip has aught of a foundation in nature.

PLATONIC YEAR, or the Great Year, a period of time determined by the revolution of the equinoxes, or the ſpace wherein the ſtars and conſtellations return to their former places, in reſpect of the equinoxes. The Platonic year, according to Tycho Brahe, is 25816, according to Ricciolus 25920, and according to Caſſini 24800 years. See *Preceſſion of the Equinoxes.*

This period once accompliſhed, it was an opinion among the ancients, that the world was to begin anew, and the ſame ſeries of things to turn over again.

PLATONISM, the doctrine and ſentiments of Plato and his followers.

PLATTOON, or Plottoon, in the military art, a ſmall ſquare body of forty or fifty men, drawn out of a battalion of foot, and placed between the ſquadrons of horſe, to ſuſtain them; or in ambuſcades, ſtreights, and defiles, where there is not room for whole battalions or regiments. Plattons are always uſed when they form the hollow ſquare, to ſtrengthen the angles. The grenadiers are generally poſted in plattoons.

PLEA, in law, what either party alledges for himſelf in court, in a cauſe there depending; and, in a more reſtrained ſenſe, the defendant's anſwer to the plaintiff's declaration. Pleas are uſually divided into thoſe of the crown, and common pleas. Pleas of the crown are all ſuits in the king's name, or in the name of the attorney-general on his behalf, for offences againſt his crown and dignity, and againſt his peace; as treaſon, murder, felony, &c. Common pleas are ſuch ſuits as are carried on between common perſons, in civil caſes. Theſe pleas may be divided into as many branches as there are actions. To an action there is either a general or a ſpecial plea: and here a general plea is a general anſwer to the declaration; as in a debt or contract, the general plea is, that he owes nothing, in a debt upon bond, that it is not his deed, or he paid it on the day; in an action on a promiſe, that he made no promiſe; and in a treſpaſs, not guilty. Special pleas are either in bar to the action brought, or in abatement of the writ on which the action is framed. All pleas are to be ſuccinct, without any unneceſſary repetitions, and muſt be direct and pertinent to the caſe.

PLEADING, in law, a ſpeech uttered at the bar, in defence of a cauſe: but, in a ſtricter ſenſe, the allegations of the parties to a ſuit, made after the declaration, till the iſſue is joined. In this ſenſe they expreſs what is contained in the bar, replication, and rejoinder; and not what is in the declaration itſelf.

Hence defaults in the matter of declaration are not confined within the miſpleading. From the Conqueſt all pleading was performed in French, till the reign of Edward III. when it was appointed that the pleas ſhould be pleaded in Engliſh; but that they ſhould be entered or recorded in Latin.

PLEASURE and Pain, ſays Mr. Locke, are ſimple ideas, which we receive both from ſenſation and reflection; there being thoughts of the mind, as well as ſenſation accompanied with pleaſure or pain. See *Pain.*

There are a great many modes of pleaſure and pain, which reſult from the various conſiderations of good and evil, whether natural or moral, and the paſſions thereby excited. Pleaſure and pain ſeem to be the means made uſe of by nature, to direct us in the purſuit of happineſs; ſince pleaſure is annexed to whatever contributes thereto, and pain is the companion of what tends to our ruin. Hence it is, that the pleaſures of a child, a youth, a grown perſon, and an old man, all vary, according to the different things required by nature in each ſtate, whether ſimply for the preſervation of the individual, or for that and propagation jointly.

PLEBEIAN, *Plebeius*, a perſon of the rank of the common people. It is chiefly uſed in ſpeaking of the ancient Romans, who were divided into ſenators, knights, and plebeians or commons.

PLEBISCITUM, in Roman antiquity, a law enacted by the common people, at the requeſt of the tribune, or other plebeian magiſtrate, without the intervention of the ſenate; but more particularly denotes the law which the people made, when they retired to the Aventine mount.

PLEDGE, *Plegius* in common law, a ſurety, either real or perſonal, which the plaintiff is to find, for proſecuting the ſuit.

PLEDGET, BOLSTER, or COMPRESS, *Plumaceolus*, in ſurgery, a kind of flat tent, laid over a wound to imbibe the ſuperfluous humours, and keep it clean. See *Wound.*

PLEIADES, *Virgiliæ*, in aſtronomy, an aſſemblage of ſeven ſtars in the neck of the conſtellation Taurus.

* PLEIADES, in fabulous hiſtory, the ſeven daughters of Atlas, king of Mauritania, and Pleione, were thus called from their mother. They were Maia, Electra, Taygete, Aſterope, Merope, Halcyone, and Celæno, and were alſo called Atlantides, from their father Atlas. They were carried off by Buſiris, king of Egypt; but Hercules having conquered Buſiris, delivered them to their father; they afterwards however ſuffered a new perſecution from Orion, who purſued them five years, till Jove being prevailed on by their prayers, took them up into the heavens, where they form the conſtellation which bears their name

PLENARY, ſomething complete or full.

PLENILUNIUM, in aſtronomy, that phaſis of the moon commonly called the full moon.

PLENIPOTENTIARY, a perſon veſted with full power, to do any thing. See *Ambaſſador.*

PLENITUDE, *Plenitudo*, the quality of a thing that is full, or fills another.

PLENUM, in phyſics, according to the Carteſians, that ſtate of things, wherein every part of ſpace is ſuppoſed to be full of matter; in oppoſition to a vacuum.

PLEONASM, *Pleonaſmus*, *Redundantia*, a figure in rhetoric, whereby we uſe words ſeemingly ſuperfluous, in order to expreſs a thought with the greater energy; ſuch as, "I ſaw it with my *own eyes*," "I heard it with my *own ears*," &c.

PLETHORA, in medicine, a greater redundance of laudable blood and humours than is capable of undergoing thoſe changes which muſt neceſſarily happen for the purpoſes of life, without inducing diſeaſes. A plethora is cured by veneſection, exerciſe, watching, a ſharp and acid diet, after due evacuations, and by a gradual omiſſion of theſe evacuations.

PLETHORIC, *Plethoricus*, a perſon abounding with blood, or labouring under a plethora. The uſe of the pleura is to lubricate and ſtrengthen the whole cavity of the thorax.

PLEURISY, ϖλευρῖτις, in medicine, a violent pain in the ſide, attended with an acute fever, a cough, and a difficulty of breathing. This diſorder affects all the parts of the internal integumens of the thorax, the whole of the pleura, and the whole of the mediaſtinum; and therefore, when it is ſeated in the membrane internally lining the ribs, it is called a true, or internal pleuriſy; but when it chiefly occupies the external parts, and only the intercoſtal muſcles, and thoſe above them, are affected, it is called a ſpurious or baſtard-pleuriſy. The pleuriſy is moſt predominant between the ſpring and ſummer. It begins with chilneſs and ſhivering, which are ſoon ſucceeded by heat, thirſt, inquietude, and the other common ſymptoms of a fever. After a few hours the patient is ſeized with a violent pricking pain in one of his ſides, about the ribs, which ſometimes extends itſelf towards the ſhoulder-blades, ſometimes towards the back-bone, and ſometimes towards the fore-parts of the breaſt, and this is attended with frequent coughing. The matter which the patient ſpits is at firſt little and thin, and mixed with particles of blood; but as the diſeaſe advances, it is more plentiful and more concocted, but not without a mixture of blood. The pulſe is remarkably ſtrong, and ſeems to vibrate like a tenſe ſtring of a muſical inſtrument; and the blood drawn from a vein, as ſoon as it is cold, looks like melted ſuet. As to the ſpitting, it is frequently abſent; and hence pleuriſies are diſtinguiſhed into moiſt and dry. As in all inflammatory fevers, ſo in this, too hot a regimen is to be avoided, both with reſpect to the bed-cloaths and the heat of the room; nor muſt the patient be expoſed to the cold air, nor drink things actually cold. Hoffman obſerves, that all ſtrong ſudorifics and cathartics are hurtful; and that if the patient has three or four ſtools, the courſe of nature muſt not be ſtopped. The diet ſhould be cooling, relaxing, ſlender, and diluting. Moiſtening things taken warm, are preferable to all others; and hence barley or oatmeal-gruel, ſweetened with honey, and alſo ſweet whey, are proper. If the phyſician is called before the third day, Boerhaave directs a large quantity of blood to be let, from a wide orifice in a large veſſel, and to fetch deep ſighs, or cough, to promote its celerity; and the part affected ſhould be rubbed gently at the ſame time, and the bleeding continued till the pain remits, or the patient is ready to faint. This ſhould be repeated as often as the ſymptoms return, which it was intended to remove, and till the abſence of the white inflammatory pellicle from the ſurface of the blood when cold, ſhews it is time to leave it off. This Huxham confirms by his own experience, and adds, that after the fourth day, bleeding is not ſafe; he likewiſe recommends fomenting the part, which often eaſes the pain, and terminates the diſeaſe: but if it is obſtinate, he recommends ſlight ſcarifications, then cupping, and afterwards a bliſter on the ſame place; which has been ſucceſsful, when the uſual methods failed. The patient's body ſhould be kept open, for which purpoſe emollient clyſters are proper; and he ſhould, at the ſame time, take large quantities of ſtrong diluting, aperient, and antiſeptic liquors: for this purpoſe, take the leaves of ſcordium, jack-by-the-hedge, and white-horehound, each two ounces: boil them in two pints of water, with which mix of the oxymel of ſquills, eight ounces; of nitre, three drams; and of treacle-vinegar, one ounce: of this mixture let the patient, every quarter of an hour, take two ounces, as warm as poſſible.

Dr. Mead obſerves, on the treatment of this diſorder, that after drawing as much blood as is neceſſary, draughts with freſh-drawn linſeed oil, are of great ſervice for eaſing the cough; nitre, for allaying the heat; and for diſſolving the ſizy blood that obſtructs the ſmall canals, wild goat's blood and volatile ſalts: and, laſtly, a bliſter laid on the part affected, in order to draw forth the peccant humour.

A purulent abſceſs or empyema is ſometimes formed in this diſeaſe; for the treatment of which, ſee *Empyema*.

As to the baſtard-pleuriſy, Hoffman ſays, that it is properly a kind of rheumatiſm, and does not require bleeding unleſs the patient is plethoric, but a diaphoreſis and a more free perſpiration. Lanciſi, however, adviſes plentiful bleeding in the arm, ſcarifying the part affected, and cupping: and during the cure, it is neceſſary to keep the body open, and the bowels free from ſpaſms; for which purpoſes, emollient clyſters are proper, with oil of ſweet almonds.

PICA POLONICA, in medicine, a diſeaſe of the hair, almoſt peculiar to Poland and Lithuania, and hence denominated Polonica. It conſiſts of a preternatural bulk of the hair, which being firmly conglutinated and wrapped up in inextricable knots, and extended to a monſtrous length, affords a very unſeemly ſpectacle. When theſe are cut off, the blood is diſcharged from them, the head racked with pain, the ſight impaired, and the patient's life frequently endangered.

PLINTHE, ORLE, or ORLO, in architecture,

Fig. 1.

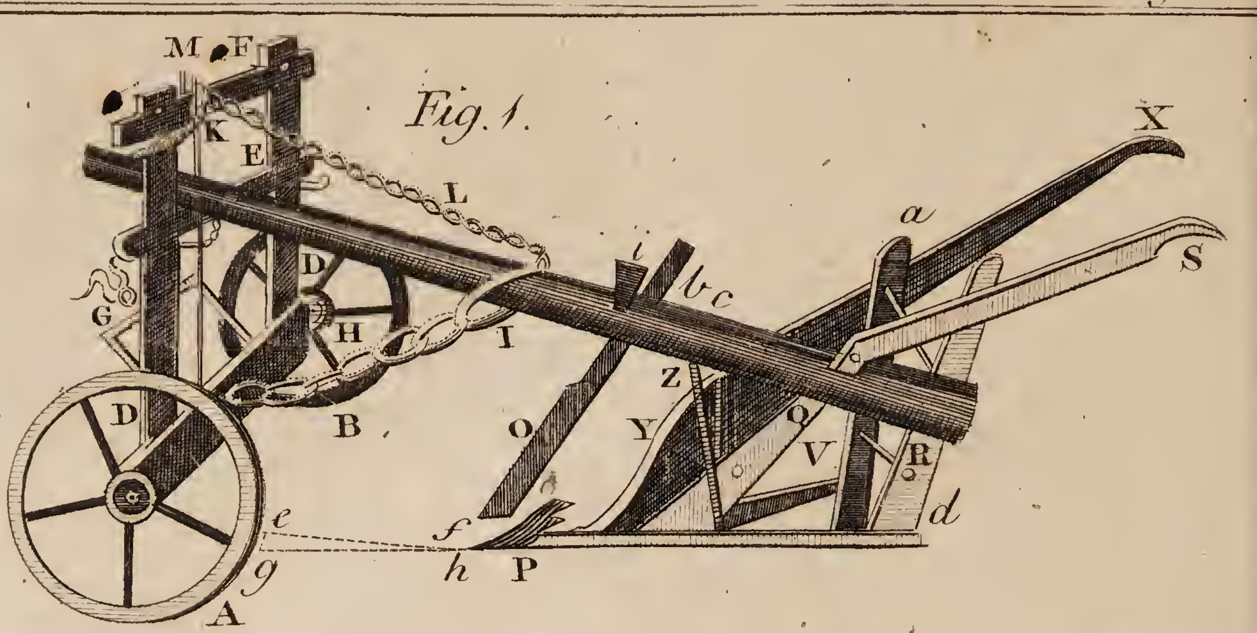


Fig. 2.

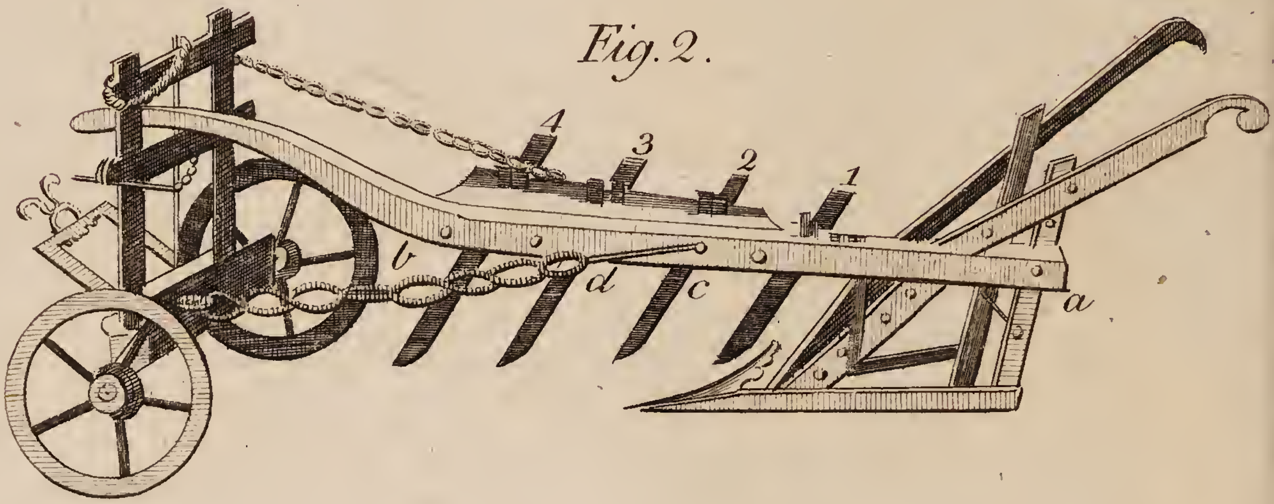


Fig. 3.

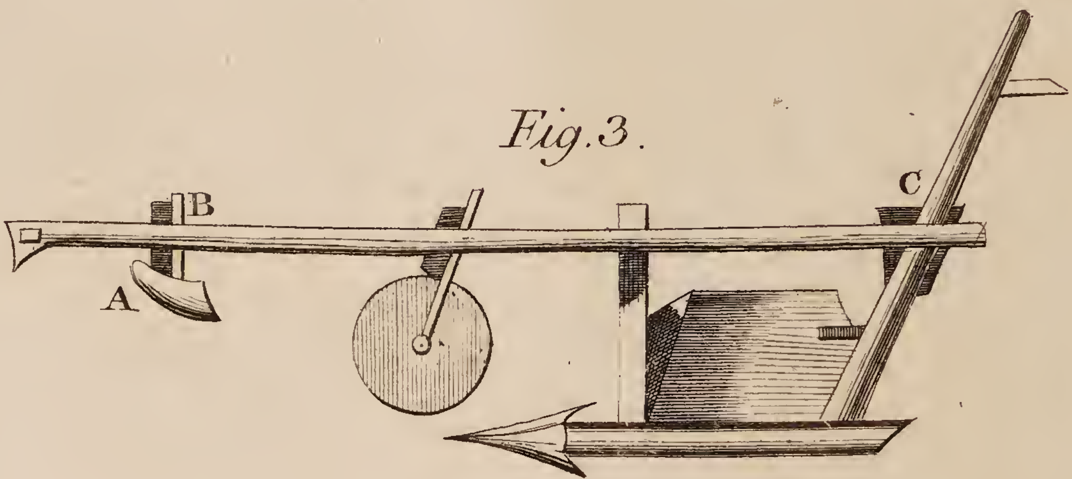
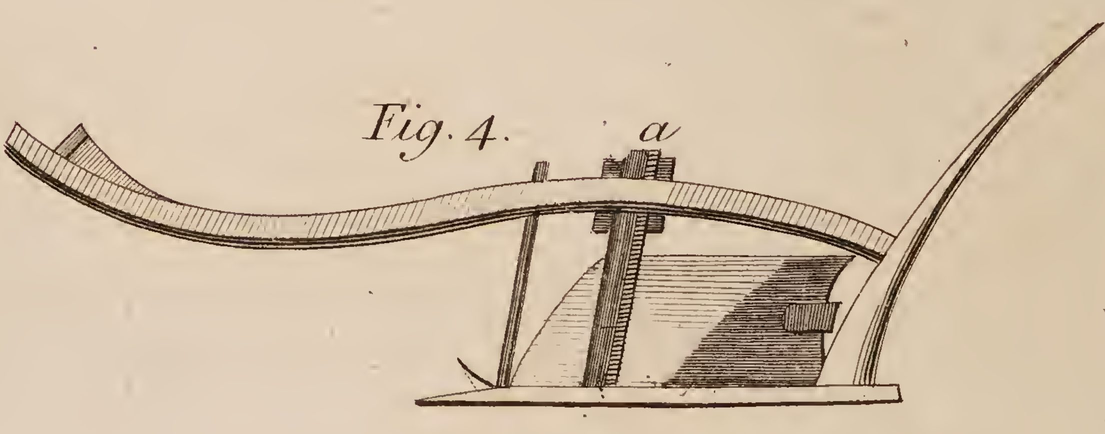


Fig. 4.



architecture, a flat ſquare member, in the form of a brick.

It is uſed as the foundation of columns, being that flat ſquare table, under the moulding of the baſe and pedeſtal, at the bottom of the whole order. It ſeems to have been originally intended to keep the bottom of the original wooden pillars from rotting.

Vitruvius alſo calls the Tuſcan abacus, plinth.

PLINTH *of a Statue*, &c. is a baſe, either flat, round, or ſquare, that ſerves to ſupport it.

PLOT, in dramatic poetry, is ſometimes uſed for the fable of a tragedy or comedy, but more particularly the knot or intrigue, which makes the embarras of any piece. The unravelling puts an end to the plot.

PLOT, in ſurveying, the plan or draught of any field, farm, or manor, ſurveyed with an inſtrument, and laid down in the proper figure and dimenſions.

PLOTTING, among ſurveyors, is the art of laying down on paper, &c. the ſeveral angles and lines of a tract of ground ſurveyed by a theodolite, &c. and a chain.

In ſurveying with the plain-table, the plotting is ſaved; the ſeveral angles and diſtances being laid down on the ſpot, as faſt as they are taken. See the article *Plain-Table*.

But, in working with the theodolite, ſemi-circle, or circumferentor, the angles are taken in degrees; and the diſtances in chains and links, ſo that there remains an after-operation to reduce theſe members into lines, and ſo to form a draught, plan or map: this operation is called plotting. Plotting then is performed by means of two inſtruments, the protractor and plotting ſcale. By the firſt, ſeveral angles obſerved in the field with a theodolite, or the like, and entered down in degrees in the field-book, are protracted on paper in their juſt quantity. By the latter, the ſeveral diſtances meaſured with the chain, and entered down in like manner in the field-book, are laid down in their juſt proportion

PLOVER, *Plurialis*, in ornithology, the Engliſh name of ſeveral diſtinct birds; as the green plover, or variegated black and yellowiſh charadrius, about the ſize of the common lapwing; and the grey plover, or blackiſh-brown tringa, with a black beak and green legs, a very beautiful bird.

Baſtard PLOVER, the name by which the vanellus, or lapwing, is called in ſeveral parts of the kingdom. See *Vanellus*.

PLOUGH, in agriculture, a machine for turning up the ſoil, contrived to ſave the time, labour, and expence, that without this inſtrument muſt have been employed in digging land, to prepare it for the ſowing all ſorts of grain.

The ſtructure of a plough is various for various kinds of grounds; but the common two-wheeled plough, in plate XLIII. *fig.* 1. uſed in almoſt all the counties in the ſouth of England, is generally eſteemed the beſt for all ſorts of land, except ſuch miry clays as ſtick to the wheels, and clog them up ſo as to prevent their turning round. It is commonly divided into two parts, the plough-head, and the plough-tail. The plough-head contains the two-wheels A B, and their axis, or iron-ſpindle, which paſſes through the box C, and turns round both in it and in the wheels; the two crow-ſtaves D D, faſtened perpendicularly into the box, having in each two rows of holes, in order to raiſe or ſink the beam, by pinning up or down the pillow E, to increaſe or diminiſh the depth of the furrow; the gallows F, through which the croſs-ſtaves paſs at top, by mortiſes into which they are pinned; G the wilds, with its links and crooks of iron, by which the plough is drawn; H the tow-chain, which faſtens the plough-tail to the plough-head, by the collar I at one end, and by the other end paſſing through a hole in the middle of the box, where it is pinned in by the ſtake K; L the bridle-chain, one end of which is faſtened to the beam with a pin, and the other end to the top of the ſtake, which ſtake is held up to the left crow-ſtaff, by the end of the with or rope M paſſing round it above, and under the end of the gallows below, or by the end of the bridle-chain itſelf, when that is long enough. The plough-tail conſiſts of the beam, N; the coulter, O; the ſhare, P; and the ſheat, Q; the hinder ſheat, R, paſſing through the beam near its end; S, the ſhort handle, faſtened to the top of the hinder ſheat by a pin, and to the top of the fore ſheat by another pin; T the drock, which belongs to the right-ſide of the plough-tail, and to which the ground wriſt V is faſtened; as is the earth-board, whoſe fore-part W, is ſeen before the ſheat; as alſo the long handle X, whoſe fore-part Y appears before the ſheat, and is faſtened to the drock by the pin at *a*, the other end of which pin goes into the beam. Z is the double retch, which holds up the ſheat, and paſſes through the beam to be faſtened by its ſcrews and nuts at *b* and *c*.

The ſtructure of the four-coultered plough (*fig.* 2.) is in ſeveral reſpects different from this, though in general founded on it. Its beam is ten feet four inches long, whereas that of the common plough is but eight feet: it differs alſo in ſhape; for as the other is ſtraight from one end to the other, this is ſtraight only from *a* to *b*, and thence turns up, in the manner ſhewn in the plate; ſo that a perpendicular line let down from the corner at *a*, to the even ſurface on which the plough ſtands, would be eleven inches and an half, which is its height in that place; and if another line was let down from the turning of the beam at *b*, to the ſame ſurface, it would be one foot eight inches and a half, which is the height the beam ſtands from the ground at that part; and a third line let down to the ſurface from the bottom of the beam, at that part which bears upon the pillow, will ſhew the beam to be, in that part, two feet ten inches high above the ſurface. At the diſtance of three feet two inches from the end of the beam, at the plough-tail, the firſt coulter, or that next the ſhare, is let through: and at thirteen inches from this, a ſecond coulter is let through: a third at the ſame diſtance from that; and finally, a fourth at the ſame diſtance from the third. The crookedneſs of the beam is to avoid the too great length of the fore-moſt coulters, which would be ſo long if the beam was ſtraight all the way, that they would be apt to bend and be diſplaced, unleſs they were vaſtly thick and clumſy.

The ſheat in this plough is to be ſeven inches broad, and the fixing the ſheat in this, as well as in the common plough, is the niceſt part and requires the utmoſt art of the maker; for ſuppoſing the axis of the beam, and the left ſide of the ſhare to be both horizontal, they muſt never be ſet parallel to each other; but the ſtraight ſide of the ſhare muſt make an angle on the left-ſide of the beam, which muſt be very acute, that the tail of the ſhare may preſs leſs againſt the ſide of the trench than the point does: this angle is ſhewn by the pricked lines at the bottom of fig. 1. where the line *e f* is ſuppoſed to be the axis of the beam let down to the ground, and the line *g h*, parallel to the left-ſide of the ſhare. The great thing to be taken care of, is the placing the four coulters, which muſt be ſo ſet that the four imaginary planes deſcribed by the four edges, as the plough moves forwards, may be all parallel to each other, or very nearly ſo: for if any one of them ſhould be very much inclined to, or ſhould recede much from either of the other, then they would not enter the ground together. In order to the placing them thus, the ſecond coulter-hole muſt be two inches and a half more on the right-hand than the firſt; the third muſt be as much more to the right of the ſecond; and the fourth the ſame diſtance to the right of the third: and this two inches and a half muſt be carefully meaſured from the center of one hole to the center of the other. Each of theſe holes is a mortiſe of an inch and a quarter wide, and is three inches and a half long at the top, and three inches at the bottom. The two oppoſite ſides of the hole are parallel to the top and bottom, but the back is oblique, and determines the obliquity of the ſtanding of the coulter, which is wedged tight up by pieces of wood. The coulters are two feet eight inches long, of which ſixteen inches are allowed for the handles, which is to be thus long, that the coulter may be drawn down as the point wears away. As to the wheels, the left-hand wheel is twenty inches diameter, and that on the right hand, two feet three inches; and the diſtance the wheels are ſet from each other is two feet five inches and a half.

Beſides theſe three are the Lincolnſhire plough, proper for fenny-lands ſubject to weeds and ſedges, and remarkable for the largeneſs of its ſhare, which is frequently a foot broad and very ſharp, (fig. 3) At A is a foot, which is ſet higher or lower, by a wedge drove in at B; and which keeps the fore part of the plough from going deeper than they would have it. At C there are wedges by which the hinder part is ſet. Inſtead of a coulter there is a wheel with a ſharp edge, which cuts the root of the graſs or ſedge as it turns round, while the broad ſhare cuts them up at the bottom.

But the moſt common plough, ſays Mortimer, is the drag-plough, repreſented in fig. 4, which is beſt for miry clays, when the land is ſoft; but is extremely bad in ſummer, when the land is hard, becauſe its point will be continually flying out of the ground. Mr. Moore has invented a new plough, for which he has obtained his Majeſty's Royal Letters Patent. Some ſpeak well of it, and others very indifferently; but as he has an excluſive right to make it by virtue of his patent, it would be needleſs to particularize it.

PLOUGHMAN, the perſon who guides the plough in the operation of tilling.

PLOUGHING, or PLOWING, in agriculture, the art of turning up the earth with a plough.

Ploughing is principally either that of lays or of fallows. Ploughing of lays is the firſt cutting up of graſs-ground, for corn, and is a work commonly performed in January. The beſt time for doing it is when the land is wet, becauſe the turf is then ſoft and tough, and will turn up without breaking. In the well turning of this conſiſts the chief part of this ſort of ploughing, which if rightly performed, will lay the turf ſo flat and true, that it can hardly be ſeen where the plough went. This, indeed, depends greatly upon the make of the plough; but if the earth-board does not turn the turf well, ſome nail upon it a ſmall piece of wood, to take the upper part of the earth as it riſes upon the earth-board, which cauſes it to fall with the graſs-ſide downwards. Ploughing of fallows, called alſo fallowing, is preparing land by ploughing long before it is ploughed for ſeed. See the article *Fallowing*.

PLUM-TREE, in botany, a genus of plants, the flower of which conſiſts of five roundiſh, concave, and large petals: the fruit is a roundiſh drupe, marked with a longitudinal furrow, and containing a compreſſed and acute-pointed nut, with the ſutures ſtanding out each way in an edge.

PLUMAGE, the feathers which ſerve birds for a covering.

PLUMBAGO, *Mock-Lead*, in mineralogy, a foſſile ſubſtance reſembling lead-ore, much uſed in drawing, and for making pencils.

PLUMBERY, the art of caſting, preparing, and working of lead, and of uſing it in buildings, &c.

The lead uſed in plumbery is furniſhed from the lead works in large ingots called pigs of lead, uſually weighing about a hundred pounds a piece.

As lead melts very eaſily it is no hard matter to caſt figures hereof by running it into moulds. But the chief article in plumbery is the ſheets and pipes of lead.

PLUMBUM, lead, in natural hiſtory. See *Lead*.

PLUMMET, PLUMB-RULE, or PLUMB-LINE, an inſtrument uſed by carpenters, maſons, &c. in order to judge whether walls, &c. be upright planes, horizontal, or the like. It is thus called from a piece of lead, *plumbum*, faſtened to the end of a cord, which uſually conſtitutes this inſtrument. Sometimes the ſtring deſcends along a wooden ruler, &c. raiſed perpendicularly on another; in which caſe it becomes a level. See *Level*.

PLUMMING, among miners, the method of uſing a mine-dial, in order to know the exact place of the work where to ſink down an air ſhaft, or to bring an adit to the work, or to know which way the load inclines when any flexure happens in it.

PLUMOSE, ſomething formed in the manner of feathers, with a ſtem and fibres iſſuing from it on each ſide: ſuch are the antennæ of certain moths, butterflies, &c.

PLURAL, *Pluralis*, in grammar, an epithet applied to that number of nouns and verbs which is uſed when we ſpeak of more than one thing; or that which expreſſes a plurality or number of things.

PLURALITY, *Pluralitas*, a diſcrete quantity, conſiſting of two, or a greater number of the ſame kind: thus we ſay a plurality of gods, &c.

Hence plurality of benefices, or livings, is where the ſame clerk is poſſeſſed of two or more ſpiritual preferments, with cure of ſouls.

PLUS, in algebra, a character marked thus +, uſed for the ſign of addition. See *Character*.

PLUSH, in commerce, &c. a kind of ſtuff having a ſort of velvet knap, or ſhag, on one ſide, compoſed regularly of a woof of a ſingle woollen thread and a double warp, the one wool, of two threads twiſted, the other goats or camels hair; though there are ſome pluſhes entirely of worſted, and others compoſed wholly of hair.

Pluſh is manufactured, like velvet, on a loom with three treadles; two of theſe ſeparate and depreſs the woollen warp, and the third raiſes the hair-warp, upon which the workman throwing the ſhuttle, paſſes the woof between the woollen and hair-warp; and afterwards laying a braſs broach, or needle, under that of the hair, he cuts it thereon with a knife deſtined for that uſe; conducting the knife on the broach, which is made a little hollow all its length, and thus gives the ſurface of the pluſh an appearance of velvet. See *Velvet*.

There are other kinds of pluſh, all of ſilk; ſome of which have a pretty long knap on one ſide, and ſome on both.

* PLUTARCH, a celebrated Greek hiſtorian and philoſopher, born at Cheronea, a city of Bœotia, and flouriſhed at the beginning of the ſecond century, under the reign of the emperor Trajan. That prince having a particular eſteem for him, honoured him with the conſular dignity, and employed him in ſeveral important negociations. Before this time Plutarch had ſtudied under Ammonius, and travelled into Greece and Egypt, in order to conſult the learned. In his ſeveral voyages, he had taken care to minute down whatever appeared moſt curious. Towards the cloſe of his life he returned to his native country, where he is ſuppoſed to have died under the reign of Antonius Pius, about the year 140. He wrote the lives of the illuſtrious men of Greece and Rome; Moral Treatiſes, and ſeveral other excellent works, filled with wiſe and judicious reflections, and with whatever is moſt curious and worthy of being known in prophane antiquity.

* PLUTO, in pagan worſhip, the king of the infernal regions, was the ſon of Saturn and Ops, and the brother of Jupiter and Neptune. Pluto finding himſelf childleſs and unmarried, mounted his chariot to viſit the world, and arriving in Sicily, became enamoured with Proſerpine, whom he ſaw gathering flowers with her companions in the valley of Enna, near Mount Ætna; when forcing her into his chariot, he drove her to the river Chemarus, through which he opened himſelf a paſſage back to the realms of night. Pluto is generally repreſented in an ebony chariot, drawn by four black horſes, ſometimes holding a ſcepter to denote his power, at others, a wand to drive away the ghoſts; and at others, ſome keys to ſignify that he had the keys of death. His helmet, according to Homer, had the quality of rendering the wearer inviſible, and that Minerva borrowed it, in order to be concealed from Mars, when he fought againſt the Trojans. Pluto was greatly revered by the Greeks and Romans, who erected temples and altars to him. To this god ſacrifices were offered in the night, and it was not lawful to offer them by day. Some mythologiſts ſuppoſe, that he was originally a prince who was deified for teaching men to bury their dead, and inventing funeral rites to their honour: others ſay, he was a king of the Moloſſians in Epirus; that he ſtole Proſerpine, and kept a dog called Cerberus, who devoured Pirithous, and would have ſerved Theſeus in the ſame manner, if Hercules had not interpoſed. The Abbe la Pluche maintains, that Pluto was the funeral Oſiris of the Egyptians, who every year, at an appointed ſeaſon, aſſembled to mourn over, and offer ſacrifices to the dead

* PLUTUS, in pagan worſhip, the god of riches. He was repreſented as appearing lame when he approached to any mortals, and with wings at his leaving them, to point out the difficulty of amaſſing wealth, and the uncertainty of its enjoyment. He was alſo frequently repreſented blind, to ſhew that he often beſtowed his favours on the leaſt deſerving, and left in neceſſity thoſe who had the greateſt merit.

* PLYMOUTH, a large ſea-port town of Devonſhire, with two markets on Mondays and Thurſdays; and two fairs, on January 25, and September 21, for horned cattle and woollen-cloth. It is ſeated on the river Plime, near the Tamer, where they fall into the ſea. It has two pariſh-churches. Its harbour is ſtrongly fortified, and has a pier on the ſouth ſide. St. Nicholas Iſle lies in the middle of the mouth of the harbour: King Charles II. built a citadel here, which is well mounted with great guns, and contains a garriſon. It was incorporated, by act of parliament, in 1439, and is governed by a mayor and recorder, who are juſtices of the quorum; three other juſtices, nine principal burgeſſes, and twenty-four common-councilmen; and ſends two members to parliament. It has a conſiderable trade, particularly in pilchards, and has two docks for the royal navy. The dock-yard is the completeſt in Europe, and the officers houſes belonging to it form a uniform, elegant, and handſome row of buildings. The dock and ſtore-rooms are convenient, the river deep, well defended from ſtorms, and capable of receiving the whole royal navy. It is forty-three miles ſouth-weſt of Exeter, and 215 from London. Long. 4. 28 W. Lat. 50. 26 N.

PNEUMATICS, called alſo PNEUMATOLOGY and PNEUMATOSOPHY, among the ſchoolmen, the doctrine and contemplation of ſpirits and ſpiritual ſubſtances, as God, angels, and the human ſoul, in which ſenſe pneumatics are the ſame with what we otherwiſe call metaphyſics.

Pneumatics is more commonly uſed among us, for that part of natural philoſophy which treats of the nature and properties of the air; the doctrine and laws of which will be found under the articles *Air*, *Atmoſphere*, &c.

PNEUMATOCELE, Hernia Flatulenta, or Windy-Rupture, in ſurgery and medicine, a ſpecies of hernia, which ſeveral authors aſſure us, occurs in practice. The ſigns by which they tell us it may be diſcovered are, 1. That upon handling the ſcrotum it feels like a bladder diſtended with wind; and that, therefore, 2. it ſeems to be much lighter than if it contained any humour, appearing alſo pellucid at the approach of a candle; and, 3. if it be ſtruck by a fillip of the finger, it ſounds like a bladder which is diſtended with wind, and ſtruck in the ſome manner.

PNEUMONICS, in pharmacy, medicines proper in diſeaſes of the lungs, in which reſpiration is affected. Of this number are ſulphur, lungwort, hyſſop, ground-ivy, and colt's-foot: they are uſed in phthiſes, aſthmas, peripneumonies, pleuriſies, &c.

POA, meadow-graſs, in botany, a genus of plants. This is the moſt common of all graſſes with us, and makes principally the green covering of moſt of our fields and meadows.

POCKET, in the woollen trade, a larger ſort of bag, in which wool is packed up to be ſent from one part of the kingdom to another. The pocket contains uſually twenty-five hundred weight of wool.

POD, among botaniſts, a term uſed to expreſs a pericarpium conſiſting of two valves, which open from the baſe to the point, and are ſeparated by a membranaceous partition, from which the ſeeds hang by a kind of funiculus umbilicalis.

POEM, a compoſition in verſe of a due length and meaſure. See *Verſe and Meaſure.*

Poems are generally denominated from the ſubject matter, as the apobaterion, epibaterion, epinicion, epithalamium, genethliac, elegiac, ſatiric, epitaph, panegyric, lyric, paſtoral, &c. and others, from the manner of narration, as epic, dramatic, &c. to which may be added, odes, eclogues, and idylliums. To this head may alſo be referred ſeveral other compoſitions of a leſs ſerious kind, as the acroſtic, enigma, anagram, cento, echo, &c.

POESY, the ſame with poetry. See *Poetry.*

POET, ϖοιητης, the author of a poem.

POETICAL, ſomething relating to poetry, or poets, in which ſenſe we ſay poetical genius, poetical licence, &c.

Poetical *Juſtice*, is chiefly uſed in reſpect of the drama, to denote a diſtribution of rewards and puniſhments to the ſeveral perſons at the cataſtrophe or cloſe of a piece, anſwerable to the ſeveral characters they appeared in.

Poetical *Riſing and Setting of the Stars.* The three kinds of riſing and ſetting, viz. the coſmical, acronical, and heliacal, were made by the ancient poets referring the riſing, &c. of the ſtars to that of the ſun.

POETICS, the doctrine of poetry, or the laws and rules of conducting pieces or compoſitions of poetry; ſuch is Ariſtotle's Poetics, a work much valued.

POETRY, the art of compoſing poems, or pieces in verſe: or, as defined by Voſſius, the art of repreſenting actions in metre. Voſſius thinks that love was the firſt occaſion of poetry, which is not improbable, conſidering that this affection is coeval with mankind, is univerſal, and naturally productive of poetry; yet it undoubtedly owes its progreſs to religion. Dacier indeed calls it the offſpring of religion; and it is certain, in the earlieſt ages of the world, that it was uſual to ſing hymns to the honour of the gods upon ſolemn feſtivals. Du Bos thinks poetry has been employed in all ages, even by the moſt unpoliſhed nations, to preſerve the memory of paſt events. Its principal aim is to flatter our ſenſes and imagination; for, according to Plato, it awakens the ſpiritual empire of the ſoul. Every kind of poetry charms us in proportion to its object, ſays Du Bos; and to be very affecting, it ought to be very exact. It is not the ſame with poetry as with other arts, for an ignorant perſon may judge of poetry by the impreſſion it makes on him; whence all men have a right to give their opinion, and this judgment ought to be founded on experience rather than on argumentation. Poetry is an art where every thing ſhould pleaſe. It is not enough to exhibit nature, which in certain places and circumſtances is rude and unpleaſant; but the poet muſt chooſe in her what is beautiful from what is not: whence a poet ought to chooſe, for the ſubject of his imitation, ſomething that is naturally affecting. There is a particular rhetoric for poetry, which conſiſts in diſcerning very preciſely what ought to be ſaid figuratively, and what to be ſpoken ſimply; and in knowing where ornament is required, and where not: yet the ſtyle ſhould be copious, and every ſpecies of writing in this art ſhould have a diction proper to itſelf.

The qualifications neceſſary for poetry, or which form a good poet, are ſeldom found united in one perſon: he muſt have an extraordinary genius, great natural gifts, a wit juſt, piercing, ſolid, and univerſal; an underſtanding clear and diſtinct; an imagination neat and pleaſant; an elevation of ſoul that depends not on art, or ſtudy, and which is purely a gift of heaven, and muſt be ſuſtained by a lively ſenſe and vivacity, a great judgment to conſider properly of things, and a vivacity to expreſs them with that grace and abundance which gives them beauty. In fine, to accompliſh a poet, is required a temperature of wit and fancy, of ſtrength and ſweetneſs, of penetration and delicacy; but, above all, he muſt have a ſovereign eloquence, and a profound capacity. Theſe are the qualities that muſt concur together to form the genius of a poet, and ſuſtain his character. The rules of poetry and verſifying are taught by art, and acquired by ſtudy; but this force and elevation of thought, which Horace calls ſomething divine, and which alone makes the poetry of any value, muſt be derived from nature, or, according to Ariſtotle, from ſome happy tranſports, to which that author gives the name of madneſs. Hence the critics conclude, the end of poetry is to pleaſe; its cauſe, either the excellence of the poet's genius, or a poetical fury and tranſport of the ſoul, manageable by the judgment; its matter, long and ſhort ſyllables, and feet compoſed hereof, with words furniſhed by grammar; and its form, the arrangement of all theſe things in juſt and agreeable verſe, expreſſing the thoughts and ſentiments of the author after the manner already mentioned. But after all, how narrow are all theſe bounds, if we conſider poetry in the light wherein the works of Homer and Virgil have ſet it! This, which is therefore diſtinguiſhed by the name of the greater poetry, in contradiſtinction to the low and ſimple, or verſification, conſiſts principally in fiction, or the invention of fables, in the expreſſing of things by allegories and metaphors, and in the inventing of actions, under which the truths which the poet has to teach, may be agreeably diſguiſed.

POINT, a term uſed in various arts.

Point, *Punctum*, in geometry, as defined by Euclid, a quantity which has no parts, or which is indiviſible. Points are the ends or extremities of lines. If a point be ſuppoſed to be moved any way, it will, by its motion, deſcribe a line.

Point, in grammar, a character uſed to mark the diviſions of diſcourſe. A point proper, is what we otherwiſe call a full ſtop or period.

The points, or vowel-points, in the Hebrew grammar, are certain characters which, in the writings of that language, ſerve to mark the vowels. The antiquity of theſe points make the ſubject of a celebrated controverſy; ſome maintaining their origin to be the ſame with that of the Hebrew language, and others aſſerting them to have been firſt introduced by Eſdras, after the Babyloniſh captivity, when he compiled the canon, tranſcribed the books into the preſent Chaldee character, and reſtored the purity of the Hebrew text. Some will have them invented by the doctors of the ſchool of Tiberias, uſually called the Maſſoretes, five or ſix hundred years after Chriſt.

Point, in aſtronomy, a term applied to certain points or places, marked in the heavens, and diſtinguiſhed by proper epithets.

The four grand points, or diviſions of the horizon, viz. the eaſt, weſt, north, and ſouth, are called the cardinal points.

The zenith and nadir are the vertical points; the points wherein the orbits of the planets cut the plane of the ecliptic, are called the nodes; the points wherein the equator and ecliptic interſect, are called the equinoctial points; particularly that whence the ſun aſcends towards the north pole, is called the vernal point, and that by which he deſcends to the ſouth pole, the autumnal point.

Point *of the Horizon*, or *Compaſs*, in navigation and geography. See *Horizon* and *Compaſs*.

Points, in heraldry, the ſeveral different parts of an eſcutcheon, denoting the local poſitions of any figure.

Point is alſo uſed in heraldry for the loweſt part of the eſcutcheon, which uſually terminates in a point.

Point is alſo an iron or ſteel inſtrument uſed with ſome variety in ſeveral arts. Engravers, etchers, cutters in wood, &c. uſe points to trace their deſigns on copper, wood, ſtone, &c.

Point, in the manufactories, a general term uſed for all kinds of laces wrought with the needle; ſuch are the point de Venice, point de France, point de Genoa, &c. which are diſtinguiſhed by the particular œconomy, and arrangement of their points.

Point, in poetry, denotes a lively briſk turn, or conceit, uſually found or expected at the cloſe of an epigram.

POINT-BLANK, in gunnery, denotes the ſhot of a gun levelled horizontally. See *Gunnery*.

POINTING, in grammar, the art of dividing a diſcourſe by points, into periods and members of periods, to ſhew the proper pauſes to be made in reading, and to facilitate the pronunciation and underſtanding thereof.

Pointing, in war, the levelling a cannon, or mortar, ſo as to play againſt any certain point.

POISON, in medicine, a malignant quality in ſome animal, vegetable, or mineral body, which renders it hurtful and even mortal to thoſe who take it.

There are three eſſential marks of poiſons, which diſtinguiſh them from other things that are noxious to human bodies. The firſt is, that they conſiſt of moſt ſubtile parts, and are conſequently pernicious in a ſmall quantity. The ſecond, that they in a ſhort time prevent the regular motions of the ſolids and fluids throughout the body, and induce the moſt grievous ſymptoms, and even death itſelf. And the third, that they exerciſe their cruelty on the moſt ſubtile fluids, and the moſt nervous parts. Poiſons are of various kinds, and operate in various manners; ſome by diſſolving the blood, others by coagulating it, and others by corroding and deſtroying the ſolid parts. All the three kingdoms have poiſons peculiar to themſelves; but the animal kingdom affords the moſt ſubtile, which are communicated by the bite of mad or venomous beaſts, when they are angered. The mineral kingdom produces arſenicals and mercurials. And the vegetable, herbs and plants of a moſt acrid, noxious, and deleterious quality, ſuch as the moſt violent cathartics and narcotics. Every ſort of poiſon ſeems to have an effect peculiar to itſelf: thus arſenic occaſions the moſt cruel torments, convulſions, mortification of the coats of the inteſtines; the ſeeds of datura induce madneſs or abſolute ſtupidity; opium brings on ſleepineſs, and a torpor on the mind; the berries of deadly night-ſhade produce madneſs, rage, or folly; litharge, unwarily taken, cauſes a convulſive colic, with an obſtinate coſtiveneſs; the bite of a mad dog occaſions the dread of water; the venom induced by the ſting of a tarantula, produces wonderful effects, for the patient is delighted with muſical inſtruments, and when he hears their ſounds, immediately begins capering: the ſting of a ſcorpion produces a ſudden chilneſs, and exceeding cold ſweats. The mineral kingdom furniſhes very few real poiſons; the only natural one is cobalt; the factitious are arſenic, corroſive ſublimate, and glaſs of antimony. The moſt dangerous vegetable poiſons are the true hemloc, wolf's bane, the deadly night-ſhade, henbane, and datura, to which may be added the roots of hemloc-dropwort.

Milk mixed with oil is an excellent remedy againſt all corroſive poiſons. Hoffman ſays, that he once prevented the death of ten young perſons, who had taken among them almoſt 2 ounces of arſenic in water-gruel, which in a ſhort time produced the higheſt anxieties, and corroding tortures, by oil of ſweet almonds and milk. They took at leaſt ten quarts apiece, which they vomited up again before the reaching to vomit ceaſed. The ſame author alſo affirms, that milk, in a large quantity, is an univerſal remedy againſt all poiſons that kill by inflammation, as hemloc does; and, if taken in time, will prevent their dreadful conſequences. Allen thinks a vomit with warm water and oil taken in large draughts, and often repeated, will be of great ſervice; as alſo warm with freſh butter; milk and oil, or milk and butter; but for fat broths, which he alſo recommends, or any thing elſe which requires ſome time for the preparation, they only allow the poiſon to take deeper root, and therefore ought not to be waited for. If the above things will not provoke the patient to vomit, oxymel of ſquills, ſalt of vitriol, or a decoction of tobacco may be uſed, as having a more immediate effect. It is hardly ſafe to give even the moſt gentle cathartic. The ſtomach being thus emptied of all, or as much as poſſible of the hemloc, recourſe muſt be had to generous wine and alexipharmics, ſuch as Venice treacle, the bezoardic powder, &c. When there is a ſuſpicion that the coats of the ſtomach or inteſtines are corroded or ulcerated, it will not be proper for the patient to uſe ſpices or vinegar, nor to indulge in drinking too much wine; but to take a decoction of barley with raiſins, and a decoction of china-root, ſaſſafras, &c. The ſame method is moſt likely to anſwer when any deleterious herb or root has been eaten by miſtake, though the particular ſpecies ſhould not be known: and Hoffman affirms, that when the patient has been ſtupified by narcotics, the beſt remedies are vomits mixed with oil.

* POITIERS, battle near. This famous battle was fought in the year 1356, ten years after that at Crecy, ſoon after which there was a truce concluded between the Engliſh and the French, but very indifferently obſerved, for both parties were continually in arms in ſmall bodies and detachments, each reproaching the other with having begun firſt. Many inroads, ſlight ſkirmiſhes, and ſieges happened, with various ſucceſs on both ſides, while the two kings connived at their ſubjects, till the whole affair became ſo perplexed, that it was difficult to decide who had the moſt cauſe of reſentment. However, it is certain that Edward III. the Engliſh monarch, ſignified to the pope, that he was willing to make peace with John I. the French king, and reſign his title to the crown of France, on condition that the duchy of Guienne, and county of Ponthieu, ſhould be reſtored to him as independent ſovereignties, and that John ſhould make a ceſſion to him of the lands he had conquered about Calais, and the ſuperiority of Flanders. The archbiſhop of Canterbury, with the duke of Lancaſter, and ſome other noblemen, had been ſent as ambaſſadors to Guienne, to treat with the French deputies in preſence of the pope's legate; but as neither prince would yield any circumſtance in favour of the other, little was expected from this negotiation, and both ſides prepared for war, which now ſeemed unavoidable; and which was the leſs unacceptable to John, as he had lately brought over the Flemings to his intereſt. In 1355, Edward went over to France, where he ravaged the Boulonnois and Artois, but was obliged to return to the defence of England, which was threatened with an invaſion from Scotland. He left his ſon Edward to finiſh his buſineſs in France. That prince having refreſhed his troops, after the fatigues of a ſevere campaign, began his march from Bourdeaux, on the 6th day of July 1356, at the head of two thouſand men at arms, ſix thouſand archers, and four thouſand infantry. Paſſing through the Agenois, he ravaged Quercy, the Limouſin, and Auvergne, fell into Berry, attempted Iſſodun and Bourges without ſucceſs, and took Vierzon by aſſault. Here he firſt underſtood that the French king lay encamped at Chartres, with a prodigious army collected from all parts of his kingdom. Suſpecting that Edward intended to paſs the Loire, and join the duke of Lancaſter in Normandy, he had diſpoſed his troops in ſuch a manner as to guard all the towns and paſſes on that river; and the prince of Wales being informed of this diſpoſition, reſolved to turn off on the left to Romarantin, ravage Poitou, and return through Saintonge to Bourdeaux. Three hundred lances, under the command of the lords of Craon and Boucicaut, in attempting to cut off his advanced guard, were defeated, fled to the caſtle of Romarantin, where, in a few days, they were obliged to ſurrender at diſcretion. The prince in his route had taken above ſix thouſand men at arms, who were ſent priſoners to Bourdeaux, and laid waſte a prodigious tract of country. Marching through part of Touraine and Anjou, ſouth of the Loire, he now entered Poitou; and, on Saturday the 17th day of September, encamped between Beauvoir and Maupertius, within two leagues of Poitiers. The king of France coming up with an army of ſixty thouſand horſe, beſides infantry, called a council of war, in which it was reſolved to attack the Engliſh next morning. Edward was already ſo ſtraitened for want of proviſions, that in a few days he muſt have been ſtarved into a ſurrender: but the French, confiding in their valour, and the vaſt ſuperiority of their numbers, demanded a battle ſo eagerly, that John did not think proper to diſappoint their ardour and ambition. He divided his army into three bodies; of which the firſt and moſt advanced was commanded by his brother, the duke of Orleans; the ſecond was poſted on the left, under the conduct of the dauphin, aſſiſted by his brothers Lewis and John; while the king in perſon, accompanied by his youngeſt ſon Philip, commanded a third diviſion, as a body of reſerve. This

order being ſettled, John detached the lords of Ribaumont, Landas, and Beaujeu, to view the countenance and diſpoſition of the enemy; whom they found poſted among buſhes, hedges, and vineyards, ſo as to be inacceſſible in every quarter, but by a narrow lane lined with hedges, behind which a body of Engliſh archers was planted, to command the paſſage. Ribaumont adviſed the king to diſmount all his cavalry, except 300 choſen men in complete armour, who ſhould enter the defile, and make way for the attack of the diſmounted cavaliers. In conſequence of this advice, the three hundred men were armed for this ſervice, and all the reſt of the troops ordered to charge on foot, except a few German ſquadrons, which continued on horſeback, to be occaſionally employed according to the emergencies of the action. Juſt when John was going to begin the battle, the cardinal of Perigort, employed by the pope to renew the negociations between the two crowns, running up to the king, conjured him to ſpare the lives of ſo many French gentlemen; which would neceſſarily be loſt in the attack, and allow him to repair to the Engliſh camp, where he did not doubt of being able to perſuade the prince of Wales to ſurrender. Having obtained this permiſſion, he haſtened to Edward, who being very ſenſible of his dangerous ſituation, declared himſelf ready to accept of any terms that ſhould be conſiſtent with his own honour, and that of his country. When the cardinal returned with this anſwer, John ſent back his troops to their quarters, and the mediator ſpent the whole day in paſſing between the two camps, to ſettle the articles of accommodation. The prince of Wales offered to reſtore all the places and priſoners he had taken in that campaign, and abſtain, for ſo many years, from carrying arms againſt the king of France, on condition of being allowed to retire unmoleſted to Bourdeaux. But John peremptorily inſiſted upon Edward's ſurrendering himſelf priſoner, with an hundred knights; and in that caſe the Engliſh army ſhould be permitted to retire without moleſtation. The prince, far from ſubſcribing to this article, told the cardinal, that he and his knights ſhould never be taken but in battle; and that he would rather loſe his life than agree to ſuch a propoſal. Thus the negociation was broke off, and both ſides prepared for an engagement; though Edward derived ſome advantage from this ſmall reſpite, during which he had rendered his camp more defenſible, by means of ditches and paliſadoes. On Monday morning, the French army appeared in the order of battle we have already deſcribed; and Edward drew up his handful of troops in three diviſions, ranged in a cloſe compacted form, with hedges and ditches in his front, while his flanks were defended on one ſide by a mountain, and the other by a moraſs. On the declivity of the hill the van was poſted, under the command of the earl of Warwick; the rear was conducted under the earls of Saliſbury and Suffolk; and the prince of Wales took his ſtation at the end of the lane, to command the main body, which extended itſelf into a vineyard. John de Greilly, Captal de Buche, was detached with 300 men at arms, and as many archers, to form an ambuſh under cover of the trees, buſhes, and broken ground, at the foot of the mountain, that he might fall upon the enemy's back in the heat of the action: and the open part of the ground, on which the Engliſh ſtood, was encloſed by the waggons of the army. About nine of the clock in the morning, the choſen body of men at arms, entered the lane with great reſolution; but they were ſo galled by the Engliſh archers that lined the hedges, through which they paſſed, that one half of them fell before they reached the front of Edward's main body, where they were cut in pieces by the lord Audeley. The marechals Clermont and Andrehan, advancing cloſe behind thoſe men at arms, were greatly embarraſſed by the horſes and bodies of the ſlain, which choaked up the paſſage, while the archers plied them without intermiſſion. When they penetrated to the van of the Engliſh, they met with a very warm reception from the Earl of Warwick; and Saliſbury and Suffolk, advancing from the rear, compleated their confuſion. Clermont was killed upon the ſpot, and Andrehan felled to the ground by the lord Audeley, who took him priſoner. The fate of theſe noblemen, and the ſlaughter that enſued, diſconcerted their followers ſo much, that they fell into diſorder, and fled with great precipitation. The firſt body of the French being thus routed, the dauphin advanced to the charge, though his men were already diſpirited; but they had no ſooner begun the attack, than John de Greilly ruſhing from his ambuſh, fell upon their rear with ſuch fury, that they were immediately ſeized with conſternation, and betook themſelves to flight. Thoſe noblemen who were particularly entruſted with the care of the dauphin's perſon, conveyed him from the field to Chavigny, under a guard of eight hundred lances; and the duke of Orleans, with the greateſt part of his command, which had not yet engaged, thought proper to follow the ſame route. The prince of Wales ſeeing thoſe two bodies broken and routed, immediately mounted his horſe, and advanced at the head of his men at arms, to attack the third diviſion, commanded by John himſelf, who waited for him without flinching. Notwithſtanding the impetuoſity with which Edward began the charge, the battle was a long time maintained with equal valour on both ſides, and dubious ſucceſs, till Gauchet de Brienne, duke of Athenes, and conſtable of France, was ſlain: then his brigade gave way, and victory declared in favour of the Engliſh. The prince of Wales falling in among the German cavalry, routed them at the firſt onſet, in which the count of Sarbruck was ſlain, and the count of Naſſau taken priſoner. John, king of France, attended by his ſon Philip, endeavoured to rally his troops, and animate them by his own example. He fought on foot with uncommon valour, until he was deſerted by all his followers; and Dennis de Morhec, a knight of Artois, who had formerly been in his ſervice, exhorting him to ſurrender without further oppoſition, he deſired to ſee his couſin the prince of Wales: but as Edward chanced to be in another part of the field, he threw his gauntlet to Morhec, in ſignal of ſurrender. Mean while a party of Engliſh, and another of Gaſcons, coming up, deprived him of his royal priſoner, about whom a diſpute enſued, which might have been attended with fatal conſequences to John and his ſon Philip, who ſhared his fate, had not the earl of Warwick and Reginald lord Cobham interpoſed; and conducted him to prince Edward, who had retired to his pavilion, where he repoſed himſelf after the fatigue of the battle. Upon this occaſion, the Black Prince exhibited all the heroiſm of virtue; he received the king of France with the utmoſt tenderneſs and reſpect; he comforted him under his diſaſter, by obſerving that ſucceſs often depends upon accident; that he had performed the part of a conſummate general and undaunted hero; and that he had fallen into the hands of thoſe who knew how to revere his virtues and misfortune. He expreſſed the moſt profound eſteem and every warm affection, for the royal family of France, to which he had the honour of being related; and he promiſed to exert all his influence with his father, to promote an honourable peace, which ſhould be for the advantage of both nations. He even waited upon him at ſupper, and could not be prevailed upon to ſit down, notwithſtanding the intreaties of John, who bore his fate with unſhaken fortitude; and expreſſed his ſatisfaction, that ſince he was doomed to captivity, he had the good fortune to be the priſoner of the moſt gallant prince in the univerſe. The French noblemen, who had been taken in the battle, were ſtruck with aſtoniſhment and reverential awe at this inſtance of generoſity and moderation. They looked upon him as a being of ſome ſuperior ſpecies; and while they manifeſted their veneration for his great qualities, could not help lamenting the fate of their country, which was expoſed to the reſentment of an enemy endowed with ſuch extraordinary talents. The lord Audeley having ſignalized his perſonal proweſs above all the noblemen in the field, the prince deſired to ſee him; and he was brought dangerouſly wounded to to his tent, where Edward highly extolled his valour, retained him as his knight, with a grant of 500 marks a year out of his own inheritance; which bounty he forthwith diſtributed among his four eſquires, who had fought by his ſide in the battle. Edward being informed of this particular, applauded his generoſity, confirmed the donation, and ſettled upon Audeley 600 marks a year out of the coinage of the ſtanneries of Cornwall. This great victory was gained without the loſs of one perſon of diſtinction; whereas the French loſt the flower of their nobility, who, rather than deſert their ſovereign, choſe to die in his defence. Among thoſe were the count of Dammartin, the lords of Rochefoucalt, Mathas, La Tour, Montaign, Landas, Charmy, and Ribaumont: Gucelard d'Angle was left for dead among the ſlain, but recovering of his wounds, he entered into the Engliſh ſervice, was admitted a knight of the garter, and created earl of Huntingdon. Two dukes, nineteen counts, 5000 men at arms, and about 8000 infantry, are ſaid to have been killed on the French ſide in this battle. 2000 men at arms were taken priſoners; and among theſe the counts of Ponthieu, Eu, and Tancarville, princes of the blood; the archbiſhop of Sens, the counts of Eſtampes and Vaudemont; the lords of Parthenay, Rochechouart, Chaulny, and many other noblemen. The gates of Poitiers being ſhut upon the fugitives, leſt their purſuers ſhould enter the town with them pell mell, ſuch a multitude of priſoners were taken, that the victors diſmiſſed great numbers on parole, at very eaſy ranſoms, which were punctually paid. Every ſoldier of Edward's army was enriched with the ſpoils of the enemy, and the ranſom of the priſoners, which belonged to the captors, when it did not exceed 10,000 crowns; in which caſe it was the king's property. Next day prince Edward decamped, and, without undertaking the ſiege of Poitiers, retired with his priſoners and booty through Saintonge to Bourdeaux; while the dauphin haſtening to Paris, aſſembled the three eſtates, to concert meaſures for the defence of the kingdom, and contribute their aſſiſtance towards the ranſom of their ſovereign. Before the ſtates would grant a ſupply, they took the advantage of their king's diſtreſs, to humble the power of the crown: they inſiſted upon the immediate removal of ſeven principal officers of ſtate, as well as upon the releaſe of the king of Navarre; they appointed a committee, conſiſting of twelve prelates, twelve noblemen, and the like number of burgeſſes, without whoſe advice the dauphin, who acted as lieutenant of the realm, ſhould take no ſtep in the adminiſtration; and they demanded that all the grievances of the nation ſhould be redreſſed. John being made acquainted with theſe tranſactions, deſired the dauphin would by no means agree to ſuch inſolent demands; for he would rather continue priſoner to an honourable enemy, than return home as a ſlave to his own ſubject. As the eſtates would not relax in their propoſitions, they were diſſolved by the dauphin, who had recourſe to the city of Paris for an aid to maintain the war: but the inhabitants, inſtead of complying with his requeſt, gave him to underſtand, that they were not obliged to pay any ſubſidy that was not impoſed by the three eſtates, which they exhorted him to re-aſſemble. Such anſwers he received from all the provinces but Champagne and Languedoc, which he found more tractable. Pope Innocent VI. had, upon hearing of John's being carried to Bourdeaux, ſent thither the cardinals of Perigort and St. Nital, to mediate a peace; and though they did not ſucceed in that part of their negociation, they obtained Edward's conſent to a truce for two years, by ſea and land. The duke of Lancaſter, who had inveſted Rennes, was, by an article of this agreement, to raiſe the ſiege; but he refuſed to conform to this article, until the truce ſhould be ratified by the king of England; and in the mean time carried on his operations with ſuch redoubled vigour, that the inhabitants were glad to pay an hundred thouſand crowns, to indemnify him for the expence of the ſiege, and obliged themſelves to receive a governor of his own chuſing. After the ratification of this truce, prince Edward bought up all the priſoners of diſtinction from the captors; and ſetting ſail from Guienne on the 24th day of April, with the king of France, and the other priſoners, attended by a large train of Engliſh and Gaſcon noblemen, two hundred men at arms, and two thouſand archers, landed on the 5th day of May, at Sandwich. When the tidings of the victory at Poitiers firſt arrived in England, the king, inſtead of encouraging revellings and demonſtrations of joy, deſired that the archbiſhop of Canterbury would appoint a whole week to be ſpent in prayer and thankſgiving, that he and the nation might not be too much intoxicated by their ſucceſs. Notwithſtanding this inſtance of his moderation and ſelf-denial, he now directed the lord-mayor to prepare pageants, proceſſions, and triumphal arches, to honour the public entrance of his victorious ſon, who was met in Southwark by the mayor and aldermen in their formalities, with one thouſand citizens on horſeback. The royal priſoner rode through the ſtreets of London in a magnificent habit, mounted on a fine white courſer, and attended by the prince of Wales, on a little black horſe, with ordinary trappings. The inhabitants vied with each other in diſplaying plate, tapeſtry, furniture, and arms offenſive and defenſive, in their ſhops, windows, and balconies. The ſtreets were lined with an infinite concourſe of people; and the cavalcade laſted from three in the morning till noon, when they reached Weſtminſter-hall, where the king of England ſat upon a royal throne, in expectation of their coming. He roſe up when John approached, and received him with all that courteous civility which might have been expected from a prince of his character.

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Then he embraced his ſon with great tenderneſs, and told him that the victory did not pleaſe him ſo much, as the modeſty with which he had bore his good fortune. As for the captive king, he was entertained in the moſt ſumptuous manner, and provided with an apartment in the king's palace, until the Savoy could be fitted up for his reception.

POISON-WEED, *Toxicodendron*, in botany. See *Toxicodendron*.

POLACRE, among ſeamen, a ſhip which, contrary to the common method, has caſt off her maſts, formed of one piece of timber for the whole length, and without the addition of top-maſts. Some polacres are fitted with two maſts, but in general they have three; and are alſo diſtinguiſhed by a prow, formed in a manner quite different to thoſe of other ſhips. See *Prow*.

* POLAND, a large kingdom of Europe; bounded on the Weſt by the Baltick Sea, Brandenburg, and Sileſia; on the South by Hungary, Tranſilvania, and Moldavia; and on the North and Eaſt by the dominions of Ruſſia. It is divided into three large parts, Great Poland, Little Poland, and the duchy of Lithuania; each of which is again divided into palitinates, or provinces. The government of Poland is monarchical and ariſtocratical, and is at preſent the only kingdom in Europe which is elective. The king is choſen by a general diet, called together by the archbiſhop of Gneſna, who is the chief of the republic during the inter-regnum. This diet is held in the open field, in a large hall erected for that purpoſe, above a mile from Warſaw. When the king is elected, he is obliged to take an oath, that he will maintain the privileges of the republic, called the Pacta Conventa. After his coronation, he may diſpoſe of the vacant benefices, and the offices both civil and military. He has a ſettled revenue of 140,000 a year, and cannot, by his own authority, raiſe any new taxes, or change any law. The ariſtocracy of this republic conſiſts in the ſenate and general diet. The ſenate is compoſed of the biſhops, great officers, palatines, and governors of towns, who, with the king, regulate the affairs of the kingdom. The general diets, which are aſſemblies of all the nobility, ought to be held every two years; but they meet oftener upon important occaſions. Before a general diet is held, the king ſends circular letters to the palatines, declaring what the affairs are on which the aſſemblies are to deliberate. Upon this there is a particular diet in every palatinate, wherein nothing can be determined without a general conſent; for if one gentleman oppoſes the opinion of the aſſembly, it is obliged to break up; and that palatinate from this time, can have no voice in the general diet. There likewiſe they muſt be all unanimous; for one ſenator, or nuncio, can ſtop the proceedings of the whole. The Poles are large, well made, and robuſt, and the nobility kind to ſtrangers. The burghers, or citizens, can have no eſtates but houſes in the towns, and little land for about three miles round them. The peaſants are poor, miſerable, and clowniſh; and as they poſſeſs nothing, they contribute nothing to the ſupport of the government. They are ſlaves to the gentlemen, who treat them as they pleaſe. It is not ſaid they have ſo much a year, but that they have ſo many peaſants. To the north, the air is generally cold, and they have but little wood: however, it is ſo fertile in corn in many places, that it ſupplies Sweden and Holland with large quantities. There are extenſive paſtures, and they have a large quantity of leather, furs, hemp, flax, ſalt-petre, honey, and wax. There are ſo many bees, eſpecially in Lithuania, that their common drink is mead, or metheglin. They have mines of ſalt, which are a great depth, out of which they dig rock-ſalt. The prevailing religion is the Roman Catholic, which the king muſt always profeſs: however, there are Lutherans, Calviniſts, and a great many Jews. There are three univerſities, at Cracow, Vilna, and Koningſberg; two archbiſhopricks, and fifteen biſhopricks. The principal rivers are the Nieper, the Viſtula, the Bug, the Niemen, the Nieſter, and the Bog. Cracow is the capital town, but the king generally reſides at Warſaw.

POLAR, in general, ſomething relating to the poles of the world, or poles of the artificial globes: thus we meet with polar circles, polar dial, polar projection, &c.

POLARITY, the quality of a thing conſidered as having poles; but chiefly uſed in ſpeaking of the magnet.

POLE, πολος, in aſtronomy, one of the extremities of the axis on which the ſphere revolves.

Theſe two points, each 90° diſtant from the equinoctial or equator, are by way of eminence called the poles of the world; and the extremities of the axes of the artificial globes correſponding to theſe points in the heavens are termed the poles thereof.

POLES, in ſpherics, a point equally diſtant from every part of the circumference of a great circle of the ſphere, as the center is in a plane figure; or it is a point 90° diſtant from the plane of a circle, and in a line, called the axis, paſſing perpendicularly through the center. The zenith and nadir are the poles of the horizon; and the poles of the equator are the ſame with thoſe of the ſphere.

POLES *of the Ecliptic*, are two points on the ſurface of the ſphere, 23° 30′ diſtant from the poles of the world, and 90° diſtant from every part of the ecliptic.

POLES, in magnetics, are two points of a loadſtone, correſponding to the poles of the world; the one pointing to the north, the other to the ſouth. See the article *Magnet*.

POLE, or VERTEX *of a Glaſs*, in optics, is the thickeſt part of the convex, or the thinneſt of a concave-glaſs. If the glaſs be truly ground, the pole will be exactly in the middle of its ſurface.

POLE, PERCH, or ROD, in ſurveying, is a meaſure containing ſixteen feet and a half.

POLE, or POLAR-STAR, is a ſtar of the ſecond magnitude, the laſt in the tail of urſa minor.

The nearneſs of this ſtar to the pole, whence it happens that it never ſets, renders it of vaſt ſervice in navigation, &c. for determining the meridian line, the elevation of the pole, and, conſequently, the latitude of the place, &c.

POLEMICAL, in matters of literature, an appellation given to books of controverſy, eſpecially thoſe in divinity.

POLIANTHES, in botany, a genus of plants.

POLISHER, or BURNISHER, among mechanics, an inſtrument for poliſhing and burniſhing things proper to take a poliſh.

POLISHING, in general, the operation of giving a gloſs or luſtre to certain ſubſtances, as metals, glaſs, marble, &c.

POLITICAL, in general, ſomething relating to policy of government.

POLITICAL *Arithmetic*, the application of Arithmetical calculations to political ſubjects, as the public revenues, number of people, extent and value of lands; taxes, trade, manufactures, &c. of any commonwealth.

POLITICS, the firſt part of œconomy, conſiſting in the well governing and regulating the affairs of a ſtate, for the maintenance of the public ſafety, order, tranquility, and morals.

POLITY, or POLICY, denotes the peculiar form and conſtitution of the government of any ſtate or nation; or the laws, orders, and regulations, relating thereto.

POLL, a word uſed in ancient writings for the head: hence to poll, is either to vote or to enter down the names of thoſe perſons who give in their votes at an election.

POLL-MONEY, a capitation or tax impoſed by the authority of parliament on the head or perſon either of all indifferently, or according to ſome known mark of diſtinction.

POLLARD, among hunters, a ſtag which has caſt his horns.

POLLUX, in aſtronomy, a fixed ſtar of the ſecond magnitude in the conſtellation of Gemini, or the Twins Its longitude is 19°. 56′. 29″ of ♊, and its latitude 6°. 39′. 27″ N.

POLYADELPHIA, In botany, a claſs of plants, the eighteenth in order, whoſe ſtamina are connected together at their baſes into ſeveral ſerieſes. The plants of this claſs are ſubdivided into orders according to the number of their ſtamina: thus the polyadelphia pentandria contain five ſtamina: and the polyadelphia icoſandria and polyandria contain twenty or more ſtamina.

POLYANDRIA, in botany, a claſs of plants, the thirteenth in order, with hermaphrodite-flowers, and a large number of ſtamina, or male parts in each; theſe always exceed the number of twelve, and grow on the receptacle of the future ſeeds. The genera of this claſs being numerous, are arranged under different orders; the firſt of which is called polyandria monogynia, as containing only one ſtyle; the ſecond, polyandria digynia, as having two ſtyles; and ſo of the polyandria trigynia, tetragynia, pentagynia, &c. from their containing three, four, five, &c. ſtyles

POLYANTHUS, in botany, a beautiful garden flower of the primroſe kind; the varieties of which are innumerable, being produced from ſeeds, which ſhould be ſown in February, either in borders, boxes, or pots, and ſhould have an eaſt aſpect, ſo as to be ſhaded from the heat of the day; in May they will be fit to be planted out for good, which ſhould be in a ſhady border of ſtrong rich earth, at about ſix inches aſunder, and the ſucceeding ſpring they will ſhew their bloſſoms, when their goodneſs may be judged of.

POLYCHREST, in pharmacy, a medicine that ſerves for many uſes, or that cures many diſeaſes.

Sal POLYCHREST, a compound ſalt made of equal parts of ſalt-petre and ſulphur, laid on a red-hot crucible.

POLYGAMIA, in botany, a claſs of plants, the twenty-third in order, the characters of which are, that they have flowers of different ſtructure; ſome having male-flowers, others female ones, and others hermaphrodite.

POLYGAMY, a plurality of wives or huſbands, in the poſſeſſion of one man or woman, at the ſame time.

POLYGLOTT, among divines and critics, chiefly denotes a bible printed in ſeveral languages. In theſe editions of the Holy Scriptures, the text in each language is ranged in oppoſite columns. The firſt polyglott bible was that of cardinal Ximenes printed in 1517, which contains the Hebrew text, The Chaldee paraphraſe on the Pentateuch, the Greek verſion of the LXX. and the ancient Latin verſion. After this, there were many others, as the bible of Juſtiniani, biſhop of Nebio, in Hebrew, Chaldee, Greek, Latin, and Arabic; the pſalter by John Potken, in Hebrew, Greek, Ethiopic, and Latin; Plantin's polyglott bible, in Hebrew, Chaldee, Greek, and Latin, with the Syriac verſion of the New Teſtament; M. le Jay's bible in Hebrew, Samaritan, Chaldee, Greek, Syriac, Latin, and Arabic; Walton's polyglott, which is a new edition of Le Jay's polyglott, more correct, extenſive, and perfect, with ſeveral new Oriental verſions, and a large collection of various readings, &c.

POLYGON, in geometry, a figure whoſe perimeter conſiſts of more than four ſides and angles.

If the ſides and angles be equal, the figure is called a regular polygon. Polygons of five ſides are called pentagons; of ſix, hexagons; of ſeven, heptagons; of eight, octagons, &c.

POLYGON, in fortification, denotes the figure of a town, or other fortreſs.

POLYGONAL *Numbers*, in algebra, ſuch as ariſe from a continual addition of a rank of numbers in arithmetical progreſſion, beginning from unity; ſo called by reaſon the units of which it conſiſts may be diſpoſed in ſuch a manner as to repreſent the figure of ſeveral equal ſides and angles.

Polygonal numbers are divided, with reſpect to the number of their terms, into, triangular, which are thoſe whoſe number of terms is 1; quadrangular or ſquare, where it is 2; pentagonal, where 3; hexagonal, where 4; heptagonal, where 5; octagonal, where 6, &c.

The geneſis of the ſeveral kinds of polygonal numbers from the ſeveral arithmetical progreſſions, may be conceived from the following examples:

Arith. progreſ.	1.	2.	3.	4.	5.	6.	7.
Triang. numb.	1.	3.	6.	10.	15.	21.	28.
Arith. progreſ.	1.	4.	5.	7.	9.	11.	13.
Square numb.	1.	4.	9.	16.	25.	36.	49.
Arith. progreſ.	1.	†.	7.	10.	13.	16.	19.
Pentag. numb.	1.	5.	12.	22.	35.	51.	70.
Arith. progreſ.	1.	5.	9.	13.	17.	21.	25.
Hexag. numb.	1.	6.	15.	28.	45.	66.	91.

Polygonal numbers may be thus generally repreſented. Let d be the common difference of the terms in any arithmetical progreſſion, beginning with an unit, and call the number of terms n; then will $1,\ 2+d,\ \overline{2+2d}\times\frac{3}{2},\ \overline{2+3d}\times\frac{4}{2},\ \overline{2+4d}\times\frac{5}{2}$, &c. to n terms be the polygonal number correſponding to the propoſed arithmetical progreſſion.

Side of a POLYGONAL *Number* is the number of terms of the arithmetical progreſſion that compoſe it; and the number of angles is that which ſhews how many angles that figure has, whence the polygonal number takes its name.

The number of angles, therefore, in triangular numbers, is 3, in tetragonal 4, in pentagonal 5, &c. conſequently the number of angles exceeds the common difference of terms by two.

POLYGONATUM, Solomon's ſeal, in botany, is ranked by Linnæus among the convallaria.

The root of this plant is a famous vulnerary; for being applied in form of a poultice, it not only heals freſh wounds, but takes away the marks of bruiſes, &c.

POLYGONUM, knot-graſs, in botany. An infuſion of this plant is a valuable aſtringent medicine in hæmorrhages of all kinds.

POLYGYNIA, among botaniſts, denotes an order or ſubdiviſion of a claſs of plants; comprehending ſuch plants of that claſs, as have a great number of piſtils, or female organs of generation.

POLYHEDRON, in geometry, a body compriſed under many rectilinear ſides or planes.

If the ſides of a polyhedron be regular polygons, all ſimilar and equal, it becomes a regular body, and may be inſcribed in a ſphere. See *Sphere.*

* POLYHYMNIA, in pagan mythology, one of the nine Muſes. She preſided over hiſtory, or rather rhetoric, and is uſually repreſented with a crown of pearls and a white robe; her right hand in action, as if haranguing, and in her left ſhe holds a caduceus or ſceptre, to ſhew her power.

POLYPE, or POLYPUS, in zoology, a ſmall freſh-water inſect, of a cylindric figure, but variable, with very long tentacula.

There is ſcarce an animal in the world more difficult to deſcribe than this ſurpriſing inſect; it varies its whole figure, at pleaſure, and is frequently found beſet with young in ſuch a manner as to appear ramoſe and divaricated; theſe young ones adhering to it in ſuch a manner as to appear parts of its body.

The production of its young is different from the common courſe of nature in other animals; for the young one iſſues from the ſide of its parent in the form of a ſmall pimple, which lengthening every hour, becomes, in about two days, a perfect animal, and drops from off its parent to ſhift for itſelf; but before it does this, it has often another growing from its ſide; and ſometimes a third from it, even before the firſt is ſeparated from its parent; and what is very extraordinary is, that there has never yet been diſcovered among them any diſtinction of ſex, or appearance of copulation; every individual of the whole ſpecies being prolific, and that as much if kept ſeparate, as if ſuffered to live among others. But what is even ſtill more ſurpriſing, is the reproduction of its ſeveral parts when cut off; for when cut into a number of ſeparate pieces, it becomes in a day or two ſo many diſtinct and ſeparate animals; each piece having the property of producing a head and tail, and the other organs neceſſary for life, and all the animal functions. There are ſeveral other ſpecies of this animal, moſt of which are found in our ditches.

POLYPODY, *Polypodium*, in botany, a plant which grows in the clefts of old walls, rocks, and decayed trees: that produced on the oak has been generally accounted the beſt, though not ſenſibly different from the others. It is found green at all ſeaſons of the year.

The leaves of polypody have a weak ungrateful ſmell, and a nauſeous ſweet taſte, leaving a kind of roughneſs and ſlight acrimony in the mouth. This root is ſuppoſed to be aperient, reſolvent, and expectorant: it was formerly ranked among the purgatives, but operates ſo weakly, a decoction of an ounce or two ſcarcely moving the belly, that it has long been expunged from that claſs: the preſent practice pay very little regard to it in any intention.

POLYPUS, or POLYPUS *of the Heart*, in medicine, a maſs compoſed of various pellicles and fibres generated in the heart and large veſſels.

Polypuſes are generally found in acute as well as chronic diſeaſes. Their principal ſeat is in the heart, pulmonary artery, and the aorta. They chiefly attack the ſanguine conſtitutions, and ſuch as have ſmall veſſels and ſoft fibres, thoſe who are of a ſedentary life, who drink little, or are free in the uſe of acid wines and ſpirituous liquors, or who eat great ſuppers.

The beginning of a polypus may be known by a compreſſion of the breaſt, a fixed pain about the heart; and when it increaſes, there is a frequent palpitation of the heart, from very ſlight cauſes; the pulſe is ſtrangely unequal, and often intermits; on a violent motion of the body, or the patients taking a medicine which diſturbs the blood, or on the mind's being violently affected, there ariſes a ſhortneſs of breath, and an incredible anxiety of the heart. Laſtly, there are frequent faintings, without any evident cauſe, or only from a certain poſition of the body; and if the blood is let fall into hot water, it will congeal like jelly, and cleave into white filaments.

A polypus frequently produces the moſt dreadful diſeaſes, and even ſudden death. In the cure, an exact regimen and diet muſt be made uſe of, with frequent exerciſe, and motions of the body. Etmuller ſays, that when it proceeds from the ſcurvy, or hyſteric affection, it is curable; and that the cure is to be attempted with chalybeate and coraline medicines, with cinnabar, volatiles, preparations of amber, and all antiſpaſmodics.

POLYPUSES *of the Lungs* are viſcous

excretions of the ſmall glands, formed in the deeper branches of the aſpera arteria, and frequently miſtaken for pieces of the blood-veſſels or lungs.

POLYPUS *of the Noſe*, a fleſhy excreſcence, in the inſide of the noſtrils, which is of various ſizes, and of different conſiſtencies; ſometimes theſe excreſcences are ſoft, ſometimes they are capable of elongation, and at other times they turn hard and rigid.

POLYSPERMOUS, among botaniſts, ſuch plants as have more ſeeds than four ſucceeding each flower, without any certain order.

POLYSYLLABLE, in grammar, a word conſiſting of more ſyllables than three; for when a word conſiſts of one, two, or three ſyllables, it is called a monoſyllable, diſſylable, and triſſyllable.

POLYSYNDETON, in grammar and rhetoric, a figure whereby a redundance of conjunctions, eſpecially copulative ones, is uſed.

POLYTHEISM, in matters of religion, the doctrine or belief of a plurality of gods.

* POLYXENA, in fabulous hiſtory, the daughter of king Priam, who beſtowed her in marriage to Achilles; but when he entered the temple of Apollo to perform the nuptial rites, he was treacherouſly ſlain by Paris. After the ſacking of Troy the ghoſt of Achilles appeared, and demanded that Polyxena ſhould be ſacrificed on his tomb, which was accordingly performed.

POMATUM, an ointment made thus: take of freſh hog's lard, and beat it into cream with roſe water, and ſcent it with oil of lemons, thyme, or the like. Pomatums are alſo occaſionally perfumed with the odours of jeſſamines, oranges, jonquils, tuberoſes, &c. They are uſed for pimples and foulneſſes of the ſkin. Alſo for dreſſing the hair, &c.

POMEGRANATE, *Malus Punica*, in botany, a prickly tree or ſhrub; with long narrow leaves; deep red pentapetalous flowers ſet in bell ſhaped cups of the ſame colour; producing fruit about the ſize of an orange, which conſiſts of a thick tough rhind, externally browniſh and internally yellow, with a juicy pulp and numerous ſeeds in cells like a honeycomb. It is a native of the ſouthern parts of Europe, and ſeldom brings its fruits to full perfection in this climate.

POMME', or POMMETTE', in heraldry, is a croſs with one or more balls or knobs at each of the ends.

POMMEL, or PUMMEL, in the manage, a piece of braſs, or other matter, at the top and in the middle of the ſaddle-bow.

POMMEL is alſo a round ball of ſilver, ſteel, or the like, fixed at the end of the guard, or graſp of a ſword, to ſerve, in ſome meaſure, as a counterpoiſe.

POMPION, in botany. See *Cucurbita*.

PONIARD, a little pointed dagger, very ſharp-edged; it is now little uſed, except among aſſaſſins and at the theatres.

PONTIFEX, PONTIF, or HIGH-PRIEST, one who has the ſuperintendance and direction of divine worſhip, as the offering of ſacrifices and other religious ſolemnities. The Romans had a college of pontiffs, and over theſe a ſovereign pontif, or *pontifex maximus*, inſtituted by Numa, whoſe function it was to preſcribe the ceremonies each god was to be worſhipped withal, compoſe the rituals, direct the veſtals, and for a long while to perform the buſineſs of augury, till, on ſome ſuperſtitious occaſion, he was prohibited intermeddling therewith. The office of the college of pontifs was to aſſiſt the high-prieſt in giving judgment in all cauſes relating to religion, inquiring into the lives and manners of the inferior prieſts, and puniſhing them, if they ſaw occaſion, &c. The Jews too had their pontifs; and among the Romaniſts, the pope is ſtill ſtyled the ſovereign pontif.

PONTIFICATE is uſed for the ſtate or dignity of a pontif, or high-prieſt; but more particularly, in modern writers, for the reign of a pope.

PONTON, or PONTOON, in war, denotes a little floating bridge made of boats and planks. The ponton is a machine conſiſting of two veſſels, at a little diſtance, joined by beams, with planks laid acroſs for the paſſage of the cavalry, the cannon, infantry, &c. over a river, or an arm of the ſea, &c. The late invented ponton is of copper furniſhed with an anchor, &c. to fix it. To make a bridge, ſeveral of theſe are diſpoſed two yards aſunder, with beams acroſs them; and over thoſe are put boards or planks. They are alſo linked on each other and faſtened on each ſide the river by a rope run through a ring in each of their heads, and fixed to a tree or ſtake on either ſhore: the whole makes one firm uniform bridge; over which a train of artillery may paſs.

POOL, is properly a reſervoir of water ſupplied with ſprings, and diſcharging the overplus by ſluices, defenders, weirs, and other cauſeways.

Mill Pool, a ſtock of water by whoſe force, &c. the motion of a mill is effected.

POOP, the aftmoſt or hindmoſt deck of a ſhip. See *Deck*.

POOR, in law, an appellation given to all perſons who are in ſo low and mean a condition as that they either are, or may become, a burden to a pariſh.

Hence under the term poor, may be included thoſe who are ſo through impotency; as the aged, the blind, the lame, the fatherleſs and motherleſs, perſons labouring under ſickneſs, or who are idiots, lunatics, &c. for all whom the overſeers of the poor are obliged to provide.

There is alſo another kind of poor, on account of caſualties and misfortunes; as decayed houſe-keepers, and thoſe who have been ruined either by fire, water, robbery, or loſſes in trade, &c. all of whom, being able, are to be ſet to work, and otherwiſe relieved by the pariſh; and it is the ſame with reſpect to poor perſons over-charged with children, diſabled labourers, &c. As for vagabonds, ſtrumpets, and other thriftleſs ſorts of poor, they may and ought to be ſent to houſes of correction, and put to hard labour, whereby they may be maintained: yet if even theſe fall ſick there, or their work is not ſufficient to maintain them, there muſt be an allowance by the overſeers for their ſupport.

Before the reign of queen Elizabeth we had few or no laws for the relief of the poor of this kingdom: but then a ſtatute was made, enacting, that the churchwardens of every pariſh, and two or more houſholders, are to be nominated and appointed yearly in Eaſter week by two juſtices of the peace, as overſeers of the poor; which ſaid overſeers ſhall meet once a month at the pariſh church, there to conſider of proper ways to relieve the poor, &c. And with the aſſent of the juſtices they may make a rate on every inhabitant of the pariſh, and occupier of lands, houſes, tithes, as alſo perſonal eſtate, to raiſe a ſtock for employing of the poor, relieving the impotent, and others not able to work, the placing poor children out apprentices, and erecting cottages for poor perſons, &c. The overſeers are likewiſe to give a true account to two juſtices within four days after the end of the year, or forfeit twenty ſhillings, and where theſe officers are not appointed, the juſtices incur five pounds penalty, 43 Eliz. c. 2. By this ſtatute the father or grandfather, and mother or grandmother, or even children of poor impotent perſons, where they are of ability, are obliged to relieve ſuch poor, according to ſuch rates as juſtices of peace in their ſeſſions ſhall appoint, under a penalty of twenty ſhillings a month for every failure therein.

It has been adjudged that a grand-father, or father-in-law, that is married to the grand-mother, or mother, is within this ſtatute; and if the father of any children leaves the pariſh, and there is a grandfather to be found, in caſe he is able to do it, it is ſaid he ſhall be chargeable with the keeping of the children, and not the pariſh where they are.

By a late act, the churchwardens and overſeers of the poor, where a wife or child is left upon a pariſh, by perſons who have eſtates or effects which might maintain them, on a warrant of two juſtices, may ſeize the goods and receive the rents of the huſband or father, in order to ſupport ſuch wife or child, 5 Geo. 1, c. 8.

Every pariſh is generally to keep and maintain its own poor; and in caſe any poor perſons demand relief, that are not pariſhioners, they ought to be removed to their proper pariſhes, and there be relieved; for that pariſh the poor were laſt legally ſettled at, is deemed the place that ſhall provide for them. And where perſons are removed by warrant or order of juſtices of peace, they ſhall be received by the church-wardens and overſeers whither ſent, on pain of forfeiting five pounds to the poor of the pariſh whence conveyed, to be levied by diſtreſs and ſale of goods, &c. Nevertheleſs a ſick perſon ſhould not be ſent out of the pariſh where he is, ſo as farther to endanger his health; in which caſe, if the juſtices grant a warrant to remove him, it will be a miſdemeanor in ſuch juſtices.

As to the ſettlement, which entiles poor perſons to relief, it is acquired ſeveral ways, viz. on account of birth, in the caſe of baſtards, vagrants, &c. by continuance for forty days in a pariſh, after public notice given to overſeers, &c. or coming into a pariſh and renting ten pounds a year eſtate, or executing any public annual office, paying a ſhare to the pariſh taxes, &c. Alſo ſervants acquire this title by ſerving a year in any pariſh; and perſons bound apprentices: and though a perſon be only a lodger, it is held that his ſervant may gain a ſettlement by ſerving a year in any pariſh.

The wife of a perſon is to be ſent to, and ſettled with her huſband, even tho' he ſhould be only a ſervant; and as generally all children are to their parents. It is however provided, that poor perſons ſhall have the liberty to go to any pariſh, by virtue of a certificate from churchwardens and overſeers, atteſted by two witneſſes, and ſubſcribed by two juſtices of the peace, owning them to be pariſhioners; and likewiſe agreeing, when they become chargeable, to receive them again.

It is alſo ordained, that there ſhall be kept in every pariſh a book, wherein the names of all ſuch perſons as receive any relief ſhall be regiſtered, with the occaſion thereof; and the pariſhioners are once a-year, or oftener, to have a meeting for that purpoſe, when the ſaid liſt ſhall be examined into. by calling over the perſons, and enquiring into the reaſons why they are relieved; and at this time a new liſt muſt be made of thoſe thought fit to be allowed to receive collection; and the perſons thus receiving relief ought to wear badges on their right ſhoulders, alſo no others ſhall have any benefit, unleſs by order under the hand of one juſtice, &c. 3 and 4 W. and M. c. 11. And no juſtice of peace ſhall make any ſuch order in behalf of any poor perſon, till oath is made of reaſonable cauſe for it, and that he was refuſed to be relieved by the overſeers, &c. And ſuch perſon ſhall be regiſtered in the pariſh-books as other poor; nor may churchwardens and overſeers bring to the pariſh account any money given to poor perſons, except on ſudden and emergent occaſions who are not regiſtered, on pain of five pounds. The churchwardens and overſeers of pariſhes are impowered to purchaſe or hire houſes, and contract with perſons to maintain the poor, &c. who refuſing to be ſo kept, ſhall be ſtruck out of the pariſh-books, &c. 9 Geo. I. cap. 7. See 3 Geo. II. cap. 29. By the 13th of Geo III. ſuch poor as are born in public lying-in hoſpitals, do not gain a ſettlement in the pariſh where ſuch hoſpital is ſituate, but are pariſhioners where their mother is a pariſhioner.

* **POPE**, (ALEXANDER) a celebrated poet, and one of the fineſt writers England has produced, was born at London, where his father was then a conſiderable merchant, on the 8th of June 1688. His aunt taught him to read, and he learned to write without any aſſiſtance, by copying printed books. The family being of the Romiſh religion, he was at eight years of age inſtructed by one Taverner, a prieſt, who taught him the rudiments of the Latin and Greek tongues together; after which he was ſent to a popiſh ſeminary near Wincheſter, and thence was removed to a ſchool at Hyde-park-corner. He very early diſcovered a talent for poetry. At twelve, he retired with his parents to Binfield, in Windſor Foreſt, where he became acquainted with the works of Spencer, Waller, and Dryden; and at that early age compoſed an elegant ſmall poem. At fourteen he wrote his Acis and Galatea, and at fifteen had acquired a readineſs in the learned languages. He had already wrote ſeveral pieces of poetry, ſome of which he afterwards burnt. The poet, ſpeaking of his firſt ſeaſon of life, ſays, "I confeſs there was a time when I was in love with myſelf, and my firſt productions were the children of ſelf-love begat upon innocence. I had made an epic poem and panegyrics on all the princes, and I thought myſelf the greateſt genius that ever was. I cannot but regret theſe delightful viſions of my childhood, which, like the fine colours we ſee, when our eyes are ſhut, are vaniſhed for ever." At ſixteen he publiſhed his Paſtorals, which procured him the honour of being admitted to the converſation and friendſhip of the earl of Halifax, lord Landſdown, and other eminent perſons; and the ſame year, 1704, he wrote the firſt part of his Windſor Foreſt. In 1708, when he was not twenty years of age, he wrote the Eſſay on Criticiſm, eſteemed a maſter-piece in its kind. Here he ſhewed that he excelled in didactic poetry, for which he was particularly formed; a clear head, ſtrong ſenſe, and ſound judgment, being his characteriſtical qualities; in 1712, when the Rape of the Lock was firſt completely publiſhed, he ſhewed that he was equally worthy of admiration for being poſſeſſed of that creative power of the imagination, which is the diſtinguiſhing excellence of a great poet. In 1713 he publiſhed propoſals for a tranſlation of Homer's Iliad, in which all parties ſo heartily concurred, that a ſubſcription amounted to 6000 l. and Lintot the bookſeller gave him 1200 l. for

the copy. Mr. Pope now enjoying a ſtate of great affluence, purchaſed a houſe at Twickenham, to which he removed in 1715, with his father and mother, ſhewing, upon all occaſions, the moſt extraordinary filial affection. As from his religion he adhered to the cauſe of king James, he made it a point of conſcience not to lend his money to the government; and therefore lived upon the capital, which he improved to the utmoſt. In 1717, he publiſhed a collection of thoſe works which he had printed ſeparately; and four years after publiſhed a new edition of Shakeſpeare's plays, in which he ſhewed that he had conſulted his fortune more than his fame. The Iliad being now finiſhed, he engaged upon the ſame footing to undertake the Odyſſey, of which Mr. Broome and Mr. Fenton did a part; and for their labours received 500 l. from Mr. Pope. This work was finiſhed in 1725, and he was afterwards engaged with Swift and Arbuthnot in printing ſome volumes of miſcellanies. About this time he narrowly eſcaped loſing his life. He was returning home in a friend's chariot, which, on paſſing a bridge, was overturned, and fell, with the horſes, into the river. The glaſſes were up, and he was unable to break them, ſo that he muſt have been drowned, had not the driver broke them, and dragged him out to the bank: however, he was ſo cut by a piece of glaſs that ever after he had not the uſe of two of his fingers. Pope had been long attacked by many writers, ſome of whom meanly ſtooped to ridicule the deformity of his perſon. However, he had, at the ſame time, the honour of having his cauſe eſpouſed by many of the beſt writers in the nation; and he himſelf laſhed his enemies in his Dunciad, which was publiſhed with notes by Dr. Arbuthnot, under the name of Scriblerus He then turned his pen to moral ſubjects, and wrote his Eſſay on Man, which was followed by his Ethic Epiſtles, and the letters which paſſed between him and his friends. "If we may judge of him by his works, ſays the earl of Orrery, his chief aim was to be eſteemed a man of virtue. His letters are written in that ſtyle; his laſt volumes are all of the moral kind; he has avoided trifles, and conſequently has eſcaped that rock which has proved very injurious to Swift's reputation. He has given his imagination full ſcope, and yet has preſerved a perpetual guard upon his conduct. The conſtitution of his body and mind might really incline him to the habits of caution and reſerve. The treatment which he met with from an innumerable tribe of adverſaries, confirmed this habit, and made him ſlower than the dean in pronouncing his judgment upon perſons and things. His proſe writings are little leſs harmonious than his verſe; and his voice in common converſation was ſo naturally muſical, that I remember honeſt Tom Southern uſed to call him the little nightingale. His manners were delicate, eaſy, and engaging; and he treated his friends with a politeneſs that charmed, and a generoſity that was much to his honour. Every gueſt was made happy within his doors, pleaſure dwelt under his roof, and elegance preſided at his table." Mr. Pope had always been ſubject to the head-ach, which at length was greatly increaſed by a dropſy in his breaſt, under which he expired the 30th of May 1744, in the fifty-ſixth year of his age.

* POPE (Territories of the) in Italy, commonly called the territories of the church, the pope being lord both in ſpirituals and temporals. It is about 400 miles in length, on the coaſt of the Adriatic ſea, from the kingdom of Naples to the territory of Venice. It is in breadth from north to ſouth not above eighty miles, which is from the gulph of Venice to the Tuſcan ſea. The ſubjects of the pope are like the reſt of the Italians; but, as the pope ſtyles himſelf the vicar of Chriſt, it might reaſonably be ſuppoſed that his ſubjects ſhould be the happieſt people in the world; but the caſe is directly contrary, for the government is ſo abſolute, and ſo ſevere, that after they have paid all their taxes, they have hardly ſufficient remaining to live upon. The pope engroſſes all the corn in the country, paying but half the value of it; but when it is ſold to the poor people, an extravagant price is always required. Even the bakers are obliged to buy their corn out of the Pope's magazines, and have leſs meaſure than what it was bought in by. The pope's territories are divided into twelve provinces, which are ſeparated by the Appenine mountains, ſome being to the eaſt, ſome to the weſt of them; their names are as follow, the Campagna di Roma, the Provincio del Patrimonio, the duchy of Caſtro, the province of Orvieto, the Perugino, the duchy of Spoletto, the province of Sabina, the marquiſate of Ancona, the duchy of Urbino, Romagna, or Romandiola, the Bologneſe, and the Ferrareſe. The

pope is a ſovereign prince, and pretends to be the vicar of Jeſus Chriſt upon earth. His miniſters of ſtate in church affairs are ſeventy cardinals, being the number of the ſeventy diſciples of our Saviour. Theſe cardinals elect the pope, which election is determined by the plurality of voices; but he that is choſen muſt have two thirds of the votes, for fear of a ſchiſm. Formerly, when the pope died, the cardinals were liable to be ſolicited to follow the views of particular perſons, which cauſed the election to be put off for a conſiderable time, but they have now remedied this inconvenience, and have built a palace for that purpoſe, called the conclave. Therefore, as ſoon as the pope is dead, the cardinals are obliged to repair thither immediately, and to continue ſhut up till they have choſen another. The election of the new pope is immediately followed by his coronation; and this ceremony is performed in the Lateran church, where they put a triple crown on his head. Formerly every cardinal had ſome hopes of being pope, but for about 200 years paſt the Italian cardinals have been only in poſſeſſion of this high dignity. Though the pope may give a cardinal's hat to whom he pleaſes, yet he is often obliged to pay ſome regard to the recommendation of crowned heads. The provinces which depend upon the holy ſee are governed by legates; but, beſides the twelve above-mentioned, there is one at Avignon in France, and another at Benevento in the kingdom of Naples. There are few popiſh countries where the pope has not ambaſſadors, who are called nuncios; there is generally one at Vienna, Paris, Liſbon, Madrid, Warſaw, Swiſſerland, Venice, Bruſſels, and Cologne; and theſe nuncios are cardinals. They have the titles of Legates a Latere. The title given to the pope is his Holineſs, and the cardinals have that of Eminence. The datary's office is the chancellory of the pope, and the decrees iſſued from thence are called apoſtolic briefs. All the eccleſiaſtics, and all the religious orders who profeſs the Roman Catholic religion, are under the pope, and every one of theſe orders has its general at Rome, by whom the pope is acquainted with every thing that paſſes in the world. As there is ſcarce a religious houſe that has not a greater revenue than they ſpend, and as they are all deſirous of ſupporting the pope's authority, we may conclude he never wants money. It has been computed, that the common revenue which the pope receives amounts to above one million ſterling. However, it is difficult to know what he receives beſides this, from the benefices which he confers, the dignities to which he nominates, the firſt fruits, the diſpenſations, the indulgencies, the beatifications, &c. There was a time that his holineſs had an army of 20,000 men on foot; and there is little doubt to be made that, in caſe of neceſſity, he could raiſe three times that number. He alſo fits out, from time to time, a few gallies againſt the Turks. However, at preſent his forces are not very formidable, either by ſea or land. About 600 years ago the pope could raiſe an army of 100,000 men, under pretence of a war in the Holy Land; but in this enlightened age he would find few willing to engage in ſuch an expedition The pope has a particular governor of Rome, which is one of the higheſt and moſt gainful offices in his diſpoſal. The Roman Catholic religion is the only one allowed throughout the pope's dominions, and yet there are about 16,000 Jews ſettled at Rome, who are obliged to go every Sunday to hear a ſermon on the controverted points; but it does not appear that they make many converts. The inquiſition at Rome is called the Holy Office, and it is milder than in other countries. Among the different congregations compoſed of cardinals, one of the principal is that of De propaganda fide, which has been eſtabliſhed to bring about the converſion of pagans and heretics. It has a printing-houſe belonging to it, where books are printed in all languages; and it is alſo a ſchool, where miſſionaries are brought up, and ſent into all parts of the world.

POPE, Papa, the ſovereign pontiff, or ſupreme head of the Romiſh church. The appellation of pope was anciently given to all Chriſtian biſhops, but about the latter end of the eleventh century, in the pontificate of Gregory VII. it was uſurped by the biſhop of Rome, whoſe peculiar title it has ever ſince continued. The ſpiritual monarchy of Rome ſprung up ſoon after the declenſion of the Roman empire.

POPPY, *Papaver*, a medicinal annual plant, which flowers from June to near the end of ſummer.

There are various kinds, ſome wild, ſome cultivated; the chief are the white, black, and red poppy.

Theſe plants are found wild, as hath been already obſerved, in ſome parts of

Europe; and ſeveral varieties of them, in regard to the flowers, are produced by culture in our gardens. The heads, ſtalks, and leaves, have an unpleaſant ſmell, and a bitteriſh biting taſte, of the ſame kind with thoſe of opium. The collection of the pure milky juice of the poppy has not, among us, been as yet practiſed in large, or with a view to the ſupplying of the common demand of opium. Inſtead of this troubleſome proceſs, the college of London directs the dried heads, cut and cleared from the ſeeds, to be boiled in water, in the proportion of three pounds and a half to ſix gallons, and now and then ſtirred to prevent their burning, till only about one third part of the liquor remains, which will be almoſt entirely ſoaked up by poppies: the decoction is to be ſtrongly preſſed out, boiled down to about four pints, then ſtrained whilſt hot, firſt through a ſieve, and afterwards through a fine woollen cloth, and ſet by for a night to ſettle: to the liquor poured off clear, ſix pounds of double refined ſugar are to be added, and the mixture boiled till its weight comes to nine pounds or a little more, that it may become a ſyrup of a proper conſiſtence. An ounce of this ſyrup is reckoned equivalent to about a grain of opium, being found to have nearly the ſame ſoporific power with that quantity of the concrete juice, though it acts in general rather more kindly, and agrees in ſome caſes where opium itſelf cannot well be borne. See *Opium*.

POPLAR, *Populus*, in botany, a genus of trees. There are different ſpecies of this genus, as the white poplar or abele tree, the black poplar, the aſpin tree, the Carolina poplar, &c. They are propagated either by layers, or large cuttings, planted in February, in a moiſt ſoil, where they will readily take root.

The beſt uſe theſe trees can be applied to, is for breaking off the weſterly or northerly winds, and to be planted in ſuch land where ſcarce any other tree will thrive, for the advantage as will ariſe from its timber; for the wood of theſe trees, eſpecially of the abele, is very good to lay for floors, where it will laſt many years, and for its exceeding whiteneſs, is by many people preferred to oak; but being of a ſoft contexture, is very ſubject to take the impreſſion of any thing hard and pointed, which renders it leſs proper for this purpoſe; it is alſo very proper for wainſcoting rooms, being leſs ſubject to ſwell or ſhrink than moſt other ſorts of wood; but for turnery-ware there is no wood equal to this, for its exceeding whiteneſs; ſo that trays, bowls, and many other utenſils, are made of it; and the bellows-makers prefer it for their uſe, as do alſo the ſhoemakers for heels for womens ſhoes; and of this wood the ſhoes are made which are worn by the peaſants in France: it is alſo very good to make light carts; and the poles are very proper to ſupport vines, hops, &c. and the loppings will afford good fuel.

PORCELAIN, or PURCELAIN, a fine ſort of earthen-ware, chiefly manufactured in China, and thence called China ware. See *China ware*.

PORCELAIN-SHELL, *Porcellana*, in natural hiſtory, a genus of ſhell-fiſh, with a ſimple ſhell without any hinge, formed of one piece, and of a gibboſe figure on the back: the mouth is long, narrow, and dentated on each ſide; and the animal inhabitant is a limax.

PORCH, in architecture, a kind of veſtibule ſupported by columns, much uſed at the entrance of the ancient temples, halls, churches, &c.

A porch, in the ancient architecture, was a veſtibule, or a diſpoſition of inſulated columns, uſually crowned with a pedement, forming a covert place before the principal door of a temple, or court of juſtice. Such is that before the door of St. Paul's Covent-Garden, the work of Inigo Jones.

PORCUPINE, *Hiſtrix*, in zoology, a very ſingular genus of quadrupeds, belonging to the order of the glires. The fore-teeth of the porcupine are obliquely truncated, and it has no canine teeth: its ears are of a figure approaching to round, and the body is covered with prickles, or ſpines, and alſo with briſtles, like thoſe of a hog. The ſpines, or quills, as they are commonly called, are two kinds; ſome being ſhorter, thicker, ſtronger, and more ſharp-pointed; and others longer, weaker, and more flexible: theſe laſt are a foot long, and compreſſed at the point. The ſpines of the firſt kind are white at the baſe, and of a duſky cheſnut colour on the upper part; and the latter kind are white at each extremity, and variegated with black and white in the middle. This terrible covering makes the creature appear much larger than it really is; it ſomewhat reſembles the badger in ſhape; and its length, from the noſe to the tail, is about two feet.

PORE, in anatomy, a little interſtice or ſpace between the parts of the ſkin, ſerving for perſpiration.

PORPESSE, in ichthyology, a ſpecies of the delphinus, with a coniform body, a broad back, and a ſubacute roſtrum; it is a very large fiſh, frequently confounded with the dolphin, from which it is different.

PORPHYRY, in natural hiſtory, a kind of ſtone of a plain uniform maſs, ſpotted with ſeparate concretions, of great hardneſs, giving fire with ſteel, not fermenting with acids, and very ſlowly and difficultly calcining in a ſtrong fire. Porphyry is of ſeveral ſorts, as 1. The porphyry of the ancients, which is a moſt elegant maſs of an extremely firm and compact ſtructure, remarkably heavy and of a fine ſtrong purple, variegated more or leſs with pale red and white; its purple is of all degrees, from the claret-colour to that of the violet, and its variegations are rarely diſpoſed in veins, but ſpots, ſometimes very ſmall, and at others, running into large blotches. It is leſs fine than many of the ordinary marbles, but it excels them all in hardneſs, and is capable of a moſt elegant poliſh. It is ſtill found in immenſe ſtrata in Egypt. 2. The hard red-lead-coloured porphyry, variegated with black, white, and green. This is a moſt beautiful and valuable ſubſtance. It has the hardneſs, and all the other characters of the Oriental porphyry, and even greatly excels it in brightneſs, and in the beauty and variegation of its colours. It is found in great plenty in the iſland of Minorca, and is extremely worth importing, for it is greatly ſuperior to all the Italian marbles. 3. The hard, pale-red porphyry, variegated with black, white, and green. This is of a pale fleſh-colour; often approaching to white. It is variegated in blotches from half an inch to an inch broad. It takes a high poliſh, and emulates all the qualities of the Oriental porphyry. It is found in immenſe ſtrata in Arabia Petræa, and in the upper Egypt, and in ſeparate nodules in Germany, England and Ireland.

PORRUM, the leek, in botany, agrees with the cepa, or onion, both in botanical characters and medicinal virtues, being only accounted weaker.

PORTA, or VENA-PORTA, in anatomy, one of the three primary veins of the human body.

The vena-porta in its ſtructure has ſome reſemblance of a tree; the roots or inferior branches of which are divided into the right and left.

PORT, a harbour, river, or haven, either formed by nature or art, to receive and ſhelter ſhipping from the ſtorms and waves of the open ſea.

Artificial ports are thoſe which are either formed by throwing a ſtrong mound or rampire acroſs the harbour's mouth to ſome iſland or rock, or erecting two long barriers, which ſtretch from the land on each ſide like arms or the horns of a creſcent, and nearly incloſe the haven; the former of theſe are called mole-heads; and the latter piers.

PORTICO, in architecture, a kind of gallery on the ground, ſupported by columns, where people walk under covert. Though this word is derived from *porta*, a gate or door, yet it is uſed for any diſpoſition of columns which form a gallery.

PORTION, in law, a part, or proportion, either of money given with a daughter, or of an inheritance.

PORTION, in the canon law, that proportion or allowance which a vicar receives out of a rectory or impropriation.

* PORTLAND, a peninſula in the county of Dorſet, ſeated on the Engliſh channel, ten miles South of Dorcheſter. It is very ſtrong both by nature and art, being ſurrounded by inacceſſible rocks, except at the place of landing, where there is a ſtrong caſtle, built by Henry VIII. It is about ſeven miles in circumference. On the South ſide ſtands the only church in the peninſula, ſo near the ſea, that for its ſecurity from the waves, they have been obliged to build the wall of the church-yard to an incredible height. It is chiefly noted for its ſtone ſo proper for building, that St. Paul's church in London, and other large ſtructures are built therewith. Long. 2. 48. W. Lat. 50. 30. N. There are frequent wrecks here, upon which occaſions the inhabitants behave ſo ill, that they are called Portland ſharks.

PORTMANTEAU, a cloak-bag of cloth, leather, &c. in which the cloak, linen and other habiliments of travellers are diſpoſed and laid on the horſe's crupper.

* PORTO BELLO, taken. On the 23d day of October 1739, war was declared againſt Spain, and on the 5th of November admiral Vernon ſailed from Jamaica to Porto Bello, with his majeſty's ſhip the Burford of 70 guns, commanded by captain Watſon; the Hamp-

ton-Court of 70 guns, commanded by captain Dent, under commander Brown; the Princeſs Louiſa of 60 guns, commanded by captain Waterhouſe; the Worceſter of 60 guns, commanded by captain Perry Mayne; the Stafford of 60 guns, commanded by captain Trever; the Norwich of 50 guns, commanded by captain Herbert; and the Sheerneſs, which he diſpatched to cruiſe off Carthagena. It was the 21ſt of that month before the admiral could bring his ſhips up in a line of battle to attack the place, which lay at the bottom of a ſpacious bay, and was defended at the entrance of the harbour by a caſtle, which from its ſtrength was called the iron caſtle. From the ſituation of the place it was abſolutely neceſſary to maſter that caſtle, before they could proceed to the town under the fort. It was very ſtrong, had it been tolerably well defended. Commodore Brown in the Hampton-Court, captain Herbert in the Norwich, and captain Mayne in the Worceſter were deſtined to the attack of it, while the admiral lay behind to obſerve the effect of their operation. Brown led the attack with great reſolution, and being well ſeconded by the other two ſhips, the admiral ſaw the Spaniards, within the forts, give way; upon which he gave the ſignal for the boats where the ſoldiers were, to land, and he himſelf coming up at the ſame time, by the fire of his ſmall arms drove the Spaniards from the lower batteries, which they chiefly depended upon for their defence; and the other ſhips not coming ſo near as he did, having diſmantled the upper works of the enemy, the landing of the ſoldiers was effectuated: and though no breach was made, the lower batteries being left unguarded, and the Spaniards retreating to the higher parts of the fortification, they were thrown into the uttermoſt conſternation. The Engliſh ſailors, without waiting for any regular capitulation, mounted upon one another's ſhoulders, upon the lower battery, drew the ſoldiers after them, and ſtruck the Spaniſh colours; upon which the few who remained upon the upper battery, hung up a white flag, and ſurrendered at diſcretion. The admiral's next attack was upon the Gloria caſtle, which lay at the bottom of the bay, and covered the town, and which he battered very ſucceſsfully with his lower tier of guns, and with very inconſiderable loſs. On the 22d the caſtle hung out a white flag, and ſent a flag of truce in a boat to the admiral, who drew up the terms upon which he was willing to grant a capitulation. The Engliſh becoming thus maſters of the town and the fort, found two 20 gun ſhips and a ſnow in the harbour; and upon ſeeing the ſtrength of the place they had taken, they were aſtoniſhed at their own ſucceſs. The admiral took on board his ſhips forty pieces of braſs cannon, ten braſs field-pieces, four braſs mortars, and eighteen braſs petararoes; and rendered uſeleſs above eighty iron canon. He then blew up the fortifications with their own powder, in which he employed captain Knowles, captain Boſcawen, commodore Brown, and captain Watſon; and it is remarkable they found more danger and difficulty in demoliſhing thoſe works, than in taking them. It was greatly to the admiral's honour, that he behaved to the Spaniards who fell into his hands with vaſt humanity, and was far from making any private advantage of his ſucceſs, giving his own ſhare to be divided among the common ſoldiers and ſailors. His courage upon this occaſion was as remarkable as his humanity, for he expoſed himſelf equally with the meaneſt ſailor or ſoldier; and the Spaniards having no idea that a ſhip durſt venture into their harbour, when they ſaw them come within piſtol-ſhot of their walls, were ſtruck with an aſtoniſhment that was more ſerviceable to the Engliſh than any ſuperiority of number or force could have been. Upon the whole, the conqueſt of Porto Bello was the more glorious, as the Spaniards had more men to defend the place than the Britiſh admiral could ſpare hands, to attack it; he having no more than two hundred and forty land ſoldiers, which were furniſhed by the government of Jamaica from the independent companies of that iſland.

PORTS *of a Ship*, the embraſures or holes through which the cannon are fixed.

Bar-PORT, a port whoſe entrance is ſtopped up with a bar, or bank of ſand, and can only be entered at high water, as that of Dublin.

Free PORT, in commerce, a port in which merchants of all nations may load and unload their veſſels, without paying any duties or cuſtoms: as thoſe of Leghorn, Genoa, &c.

PORT is alſo a ſtrong wine brought from Port-a-port, alſo called Porto and Oporto.

PORT-CRAYON, a pencil caſe,

which is uſually four or five inches long and contrived ſo as that the pencil may ſlide up and down. Its inſide is round, and its outſide is ſometimes filed into eight ſides or faces, on which are drawn the ſector-lines; ſometimes it is made round both without-ſide and within, and has its length divided into inches and parts of inches.

PORT-GREVE, or PORT-GRAVE, was formerly the principal magiſtrate of maritime towns. The chief magiſtrate of London was antiently called by this name, till Richard I. cauſed the city to be governed by two bailiffs, ſoon after which king John granted the city a mayor.

PORTRAIT, POURTRAIT, or *Pourtraiture*, in painting, the repreſentation of a perſon, and eſpecially of a face done from the life.

In this ſenſe we uſe the term portrait-painting, in contradiſtinction to hiſtory painting, where a reſemblance of perſon is uſually diſregarded. Portraits, when as large as the life, are uſually painted in oil-colours; ſometimes they are painted in minature with water-colours, crayons, paſtils, &c.

* PORTSMOUTH, a ſea-port town in Hampſhire, with two markets, on Thurſdays and Saturdays; and one fair, on July 10, for ſilver-ſmiths, mercers, cabinet-makers, linen- and woollen drapers, milleners, cutlers, ſhoe-makers, hatters, ready made cloaths, and bedding. It is one of the moſt ſecure and capacious harbours in England, being defended by a numerous artillery, both on the ſea and land ſide, and has very good fortifications. A great part of the royal navy is built here; and here are ſome of the fineſt docks, yards, and magazines of naval ſtores, in Europe. It is ſeated in the iſle of Portſey, being ſurrounded by the ſea except on the North ſide, where there is a river which runs from one arm to the other. It is much reſorted to on account of the royal navy, whoſe rendezvous is at Spithead, which is at the eaſt end of the Iſle of Wight, and oppoſite to Portſmouth. There is a draw-bridge over the river, and it has always a good garriſon. It is governed by a mayor, twelve aldermen, and burgeſſes, and ſends two members to parliament. It has one church, and two chapels, one in the garriſon, and one in the common, for the uſe of the dock, and others, beſides ſeveral meeting-houſes of the diſſenters. The houſes of Portſmouth amount to about 2000, and the inhabitants to about 12,000. The dock-yard at Portſmouth was lately burnt down, ſuppoſed to be ſet on fire by ſome of the enemies of Great Britain, but it is now perfectly repaired. It is 20 miles S. E. of Wincheſter, 18 S. by W. of Peterſfield, and 73 W. of London. Long. 16. W. Lat. 50. 48. N.

* PORTUGAL, the moſt weſtern kingdom of Europe, is about 310 miles in length, and 150 in breadth. It is bounded on the weſt and ſouth by the ocean, and on the eaſt and north by Spain. Though Spain and Portugal are in the ſame climate, yet the air of the latter is much more temperate than that of the former, on account of the neighbourhood of the ſea. Corn is not very plentiful in this country, the inhabitants not being fond of huſbandry; for this reaſon they import Indian corn from Africa, which is made uſe of by the peaſants inſtead of wheat. There are a great number of barren mountains, and yet they have plenty of olives, vineyards, oranges, and lemons, nuts, almonds, figs, and raiſins. They have ſome horned cattle, whoſe fleſh is generally lean and dry. They alſo make a great deal of ſalt with the ſea water, eſpecially in the bay of St. Ubes, from whence a great deal is exported. Their foreign trade conſiſts either in the exportation of the produce of their own country, or in the merchandize they receive from their plantations and ſettlements in various parts of the world, ſuch as ſugar, tobacco, rum, cotton, indigo, hides, Brazil and other woods for dying, many drugs of different ſorts, and excellent in their kinds. Beſides theſe, they have gold, ſilver, diamonds, and other precious ſtones from America, which bring them in immenſe riches. Towards the frontiers of Spain there are mountains in which they formerly get gold and ſilver, and the river Tagus, or Tajo, was famous for its gold ſands; but now the Portugueſe do not think them worth attending to. There are alſo mines of iron, tin, lead, quarries of marble, and ſome precious ſtones. The principal rivers are the Tajo, the Duero or Douro, the Guadiana, the Minho, and the Munda or Mondego. Portugal is divided into ſix provinces, namely, two in the middle, called Eſtramadura and Beira, two on the north, which are Entro-Minho e-Douro, and Traſ-los-Montes; alſo two on the ſouth called Alentejo and Algarva. The principal merchants are very rich. Learning is upon the decline, and the academies

academies and ſchools are gone to decay. The Portugueſe women are fruitful, and if they had not ſent ſo many colonies abroad, this country would have been full of people. The government is monarchical, and yet there is a great difference between the ſovereignty of the king of Portugal and the king of Spain; for the authority of the pope here is very great. Beſides this, the king is always obliged to live in good underſtanding with the ſtates of the kingdom, which are, the clergy, nobility, and what is called the third ſtate. Likewiſe, the authority of the king is bounded by the fundamental laws of the kingdom: for he cannot raiſe any more taxes than were ſettled in 1674, nor can he appoint a ſucceſſor when there is any failure in the royal line. It might reaſonably be imagined, that the Portugueſe ſhould abound in gold, ſilver, and jewels, but they are naturally indolent, and ſo fond of luxury in every ſenſe, that they ſpend all their wealth in the purchaſe of foreign merchandizes. No other religion is allowed here but the Roman Catholic, and they have three archbiſhops, and ten biſhops, beſides a patriarch. They have three ſevere inquiſitions, and yet there are a great number of concealed Jews, even among the grandees of the court. The authority of the pope is ſo great, that the king cannot confer any benefice without his conſent. Beſides theſe, there are three orders of eccleſiaſtical knights, who enjoy great revenues, and who would be very formidable, if the king was not grand maſter. In 1580, there was a failure in the royal line, and Philip II. king of Spain, got poſſeſſion of the crown; but in 1640, there was a great revolution, and John, duke of Braganza, obtained the crown, whoſe deſcendants have enjoyed it ever ſince. Liſbon is the capital city.

PORUS BILARIUS, according to ſome is the ſame with the hepatic duct; but others make a diſtinction between them, and obſerve, that the ductus hepaticus runs from the liver to the ductus choledochus; and that the branches of this diſtributed through the whole liver, make what are called the pori bilarii.

POSE', in heraldry, denotes a lion, horſe, or other beaſt ſtanding ſtill with all his four feet on the ground.

POSITION, or SITUATION, in phyſics, an affection of place, which expreſſes the manner of any body's being therein.

POSITION, in architecture, denotes the ſituation of a building with regard to the points of the horizon. Vitruvius directs the poſition of a building to be ſuch, as that the four corners point directly to the four cardinal winds.

POSITION, *Falſe Poſition*, or *Rule of Falſhood*, in arithmetic, conſiſts in calculating on ſeveral falſe numbers, taken at random, and, from the differences found therein, determining the number ſought.

POSITIVE, a term of relation ſometimes oppoſed to negative: hence a poſitive quantity, in algebra, is a real or affirmative quantity, or a quantity greater than nothing: thus called in oppoſition to a privative or negative quantity, which is leſs than nothing, and marked by the ſign —. Poſitive quantities are deſigned by the character + prefixed or ſuppoſed to be prefixed to them.

POSITIVE DEGREE, in grammar, is the adjective in its ſimple ſignification, without any compariſon; or it is that termination of the adjective which expreſſes itſelf ſimply, and abſolutely, without comparing it with any other.

POSSE *Comitatus*, in law, ſignifies the power of the county, or the aid and aſſiſtance of all the knights, gentlemen, yoemen, labourers, ſervants, apprentices, &c. and all others within the county that are above the age of fifteen, except women, eccleſiaſtical perſons, and ſuch as are decrepid and infirm.

POSSESION, in law, the holding or occupying of any thing, either de jure or de facto.

Poſſeſſion de jure is the title a man has to enjoy a thing, though it be uſurped, and in the actual poſſeſſion of another; or where lands are deſcended to a perſon, and he has not yet entered into them: and poſſeſſion de facto, or actual poſſeſſion, is where there is an actual and effectual enjoyment of a thing.

POSSESIVE, in grammar, a term applied to pronouns which denote the enjoyment or poſſeſſion of any thing, either in particular or in common; as *meus*, mine, and *tuus*, thine; *noſter*, ours; *veſter*, yours. See *Pronoun*.

POSSIBILITY, *Poſſibilitas*, in law, is defined to be any thing that is altogether uncertain, or what may or may not be, and is taken to be either near or remote. A near poſſibility is where an eſtate is limited to one after another's deceaſe, whilſt a remote poſſibility is ſomething extraordinary that is never likely to come to paſs.

POSSIBLE, *Poſſibile*, is ſometimes oppoſed to real exiſtence, and underſtood of a thing which, though it does not actually exiſt, yet may exiſt; as a new ſtar, another world, &c. which are particularly ſaid to be phyſically poſſible. It is alſo oppoſed to impoſſible, in which ſenſe it is applicable to any thing that does not contradict itſelf, or involve contradictory predicates, whether it actually exiſt or not, as a man, fire, &c. theſe are alſo ſaid to be logically poſſible.

POST, a courier or letter-carrier, or one who frequently changes horſes, poſted or placed on the road, for quicker diſpatch. The word is alſo applied to the houſes where ſuch a perſon takes up and lays down his charge.

Penny-Post, a poſt eſtabliſhed for the benefit of London and the adjacent parts; by which any letter or parcel not exceeding ſixteen ounces weight, or ten pounds value, is ſpeedily conveyed to and from all parts within ten miles of London.

Post, in the military art, any place or ſpot of ground fortified or not, where a body of men may make a ſtand and fortify themſelves, or remain in a condition to fight an enemy. Hence it is ſaid, that the poſt was relieved, the poſt was taken ſword in hand, &c.

Advanced Post, a ſpot of ground ſeized by a party to ſecure the army, and cover the poſts that are behind.

Posts, in building, large pieces of timber placed upright in houſes.

POSTERN, in fortification, a ſmall gate generally made in the angle of the flank of a baſtion, or in that of the curtain, or near the orillon, deſcending into the ditch; by which the garriſon may march in and out unperceived by the enemy, either to relieve the works, or to make private ſallies, &c.

POSTHUMOUS, a child born after the death of his father, or taken out of the body of a dead mother; from whence it is frequently applied to the works of an author not publiſhed till after his deceaſe.

POSTING, among merchants, the putting an account forward from one book to another, particularly from the journal or waſte-book to the ledger.

POSTPONING, putting any thing after or behind another, with regard to time.

POSTCRIPT, an article added to a letter or memoir, containing ſomething learnt or recollected after the piece was written.

POSTULATE, *Poſtulatum*, in mathematics, &c. is deſcribed to be ſuch an eaſy, and ſelf-evident ſuppoſition, as needs no explication or illuſtration to render it intelligible; as, that a right line may be drawn from one point to another; that a circle may be deſcribed on any center given, of any magnitude, &c. However, authors are not well agreed as to the ſignification of the term poſtulatum; ſome make the difference between axioms and poſtulata to be the ſame as that between theorems and problems; axioms, according to thoſe authors, being indemonſtrable theoretical truths. But others will have it, that axioms are primitive and common to all things, partaking of the nature of quantity, and which therefore may become the objects of mathematical ſcience: ſuch as number, time, extenſion, weight, motion, &c. and that poſtulata relate particularly to magnitudes, ſtrictly ſo called, as to things having local extenſion, ſuch as lines, ſurfaces, and ſolids; ſo that in this ſenſe of the word poſtulatum, Euclid, beſides axioms, or thoſe principles which are common to all kinds of quantities, has aſſumed certain poſtulata to be granted him peculiar to extenſive magnitude.

POSTURE in painting and ſculpture, the ſituation of a figure with regard to the eye, and of the ſeveral principal members thereof, with regard to each other, whereby its action is expreſſed.

POTABLE, *Potabilis*, ſomething that may be ſwallowed by way of drink.

POT-ASH, the lixivious aſhes of certain vegetables, uſed in the making of glaſs, ſoap, &c. See *Glaſs*, *Soap*, &c.

There are two principal ſorts of theſe ſalts brought chiefly from Germany, pearl-aſh and pot-aſh. The pearl-aſh is either of the whitiſh pearl colour from which it receives its name, or externally of a bluiſh caſt, which theſe kinds of ſalts are apt to receive in calcination from the contact of any inflammable matter. Both the pearl-aſhes are tolerably pure alkalies; diſſolved in water, or deliquiated in the air, they leave only a ſmall quantity of earthy matter, ſcarcely more than every alkaline ſalt does upon repeated ſolutions and calcinations. They are ſometimes, however, adulterated with heterogeneous ſaline matters, particularly ſea-ſalt. The purity of pearl-aſh from ſubſtances of the earthy kind points out the method in which it has been prepared, namely, evaporating a ley of vegetable aſhes till the ſalt remains dry.

Pot-aſh is a much more impure ſaline maſs: that called Ruſſia or Muſcovy pot-aſh is accounted the beſt. This is of a dark colour, conſiderably hard, and does not eaſily grow moiſt in the air: on boiling it in water, a quantity of earth remains undiſſolved, much larger than that of the ſalt which is extracted. It is nevertheleſs found to be ſtrongly alkaline, to be more pungent to the taſte, to ſaturate more acid, and more powerfully to diſſolve oils, than the purer alkaline ſalts: hence it is preferred by the ſope-boiler.

This ſalt is ſaid to be prepared, by burning wood with a cloſe ſmothering heat; making a ley from the coarſer part of the aſhes, and moiſtening therewith the finer part into the conſiſtence of a paſte, ſtratifying this paſte with ſome of the inflammable kinds of wood, and ſetting the pile on fire. It is not improbable that the ſaline and earthy part of the aſhes would thus run together into hard lumps; but a maſs poſſeſſing the activity of Ruſſia pot-aſh is not to be obtained by any proceſs of this kind. For the diſcovery of the ingredient on which that quality depends, we are obliged to Dr. Home, who, in his eſſay on bleaching, has proved, by a number of curious experiments, that Ruſſia pot-aſh contains a large admixture of quick-lime.

POTATOE, in botany, the Engliſh name for a ſpecies of the tuberoſe rooted ſolanum.

Culture of POTATOES.—The moſt advantageous way of propagating potatoes is, the planting them at large diſtances, and digging or horſe-hoing the ground ſeveral times between them.

Mr. Tull gives an example of this, in which the hoeing ſucceeded much better than dung, and without the expence of it. A piece of ground was planted with potatoes, the greater part of it in the common way; but in one part worſe than the reſt, they had been ſet at a yard diſtance every way. The reſt of the ground was dunged; this poor part had no dung, but was ploughed deep at ſeveral times four different ways, ſo that the ground was ſtirred and broken thoroughly every where about the potatoes. The conſequence was, that though no dung was uſed here, and though the plants appeared much weaker than in the dung part, yet the crop was greatly better than that of the other part of the field. The roots here were all large, and in the other parts of the field, where the dung had been uſed without ploughing, they were ſo ſmall, that the crop was ſcarce worth taking up.

This is one of many inſtances of the no great uſe in dunging land, without properly ſtirring it up, and ſerves to prove, what the crops of corn, and every thing elſe confirm upon trial, that the ſtirring the earth ſufficiently, without any farther trouble, will anſwer better without any other manure, than all the manure in the world without it. *Tull's Horſe-hoeing Huſbandry.*

POTENT, or POTENCE, in heraldry, a term for a kind of croſs, whoſe ends all terminate like the head of a crutch.

POTENTIAL, in medicine. Cauteries are diſtinguiſhed into actual and potential. See *Cautery.*

POTENTIAL, in grammar, an epithet applied to one of the moods of verbs. The potential is the ſame in form with the ſubjunctive, and is according to Ruddiman implied in that mood, for which reaſon that grammarian rejects it; but others will have it differ from the ſubjunctive in this, that it always implies in it either *poſſum*, *volo*, or *debeo*. It is ſometimes called the permiſſive mood, becauſe it often implies a permiſſion or conceſſion to do a thing.

POTION, POTIO, a liquid medicine, conſiſting of as much as can be drank at one draught. The writers on pharmacy diſtinguiſh potions into cathartic, cardiac, and alterative.

POTTERY, the manufacture of earthen-ware, or the art of making earthen veſſels.

The wheel and lathe are the chief, and almoſt the only inſtruments uſed in pottery: the firſt for large works, and the laſt for ſmall.

POTTLE, an Engliſh meaſure containing two quarts.

POULTICE, or POULTIS, a form of medicine alſo called cataplaſm.

POULTRY, all kinds of domeſtic birds brought up in yards, as cocks, hens, capons, ducks, turkeys, &c.

POUNCE, gum ſandaric pounded and ſifted very fine, to rub on paper, in order to preſerve it from ſinking, and to make it fit to write upon.

POUND, *Libra*, a ſtandard-weight, for the proportion and ſubdiviſions of which, ſee the article *Weight.*

POUND alſo denotes a money of account; ſo called, becauſe the ancient pound of ſilver weighed a pound troy.

POUND, among lawyers, denotes a

place of ſtrength, in which to keep cattle that are diſtrained, or put in for treſpaſs, until they are replevied or redeemed.

POURSUIVANT, or PURSUIVANT, in heraldry, a follower, the loweſt order of officers at arms.

POURVEYANCE, or PURVEYANCE, in law, the providing corn, fuel, victuals, &c. for the king's houſehold; and hence, the officer, who did ſo, was termed pourveyor.

POWDER, *Pulvis*, in pharmacy, a dry medicine well broken, either in a mortar, by grinding, or by chemical operations.

POWER, *Potentia*, in phyſiology, the faculty of doing or ſuffering any thing.

Power therefore is two-fold, viz. conſidered as able to make, or able to receive any change; the former of which may be called active power, and the latter paſſive power. Of paſſive power, all ſenſible things abundantly furniſh us with ideas, whoſe ſenſible qualities and beings we find to be in a continual flux, and therefore we look on them as liable to the ſame changes. Nor have we fewer inſtances of active power; ſince whatever change is obſerved, the mind muſt collect a power ſomewhere able to effect it; but, eſpecially, by reflecting on the operations of our own minds, as the power of perception, of volition, &c.

Dr. Keil demonſtrates that the phyſical power, or action of bodies, propagated in orbem; as light, heat, odour, &c. has its efficacy increaſed or diminiſhed in a duplicate ratio of the diſtances from the center of radiation, or exertion of that power.

POWER, in mechanics, denotes any force, whether of a man, a horſe, a ſpring, the wind, water, &c. which being applied to a machine, tends to produce motion. See *Machine* and *Engine*.

The intenſity of a power is its abſolute force; that is, its force, ſuppoſing its velocity equal to its weight: for its moving or acting force may be greater or leſs according as its velocity is increaſed or diminiſhed, in reſpect of that of the weight. As for example, if a man be the power, and can raiſe from the ground a certain weight, that weight will expreſs or be equal to the intenſity of the power; for in this caſe, whatever engine be made uſe of, that part of the engine, where the weight is duly applied, will move juſt as faſt as that on which a man acts with his whole force.

A power may act in any direction whatever; but a weight has only one direction, viz. towards the center of the earth. See *Gravitation*.

When we ſpeak of the mechanical powers, the word power is taken in a very different ſenſe from that above laid down; ſince, in this caſe, it ſignifies only an organ or inſtrument, whereby a power of a known intenſity is made to act upon a weight: and therefore we muſt take care not to attribute any real force to any ſimple or compound machine, as many are apt to do merely becauſe the name power has been given to mechanical organs, not from their effect, but from the effect which the power produces by their means. For how much ſoever the force of a power is thereby increaſed, in order to ſuſtain or raiſe a weight far ſuperior to it in intenſity, yet this cannot be done without loſing in ſpace and time what is gained in force; contrary to what ſome have vainly imagined, becauſe the vulgar commonly ſpeak of a machine as they do of an animal; attributing that effect to the machine, which is only the effect of the power by means of the machine: thus, it is uſual to ſay, ſuch a machine raiſes ſuch a quantity of water, or performs ſuch and ſuch work; when we ſhould ſay, if we would ſpeak philoſophically, ſuch a running ſtream; ſuch a fall of water, the wind, or ſo many men, horſes, oxen, &c. raiſe ſo much water in ſuch a time, &c. by means of ſuch or ſuch a machine. It were therefore to be wiſhed, that the word power were to be confined to its proper ſenſe, and not uſed to ſignify one of the mechanical organs; however, as it has been cuſtomary to uſe it in that ſenſe, we have done ſo too, but withal thought proper to give the above caution.

The ſimple mechanical organs or powers are the lever, ballance, axis in peritrochio, pully, ſcrew, wedge, and inclined plane.

POWER, in law, ſignifies in general, a particular authority, granted by any perſon to another to repreſent him, or act in his ſtead.

POWERS, in arithmetic and algebra, are numbers or quantities ariſing from the ſquaring or multiplication of any number or quantity by itſelf, and then that product by the root or firſt number given; and this third product by the root again; and ſo on ad infinitum; as 2, 4, 8, 16, 32, 64, 128, 256, &c. Where 2 is called the root or firſt power, 4 is its ſquare or ſecond power, 8 its cube or third power, 16 its biquadrate or fourth power, &c. And theſe powers in letters or ſpecies are expreſſed by repeating the root as often as the index of the power expreſſes. Thus *a* is the root or firſt power; *a a*, the ſquare or ſecond power; *a a a*, the cube; *a a a a* the biquadrate or fourth power. And to avoid the tediouſneſs of repeating the root ſo often, when the powers are high, we only put down the root with the index of the power over it thus; a^9 is the ninth power of a; b^{16}, b^{94}, are the 16th and 94th powers of b. See *Involution*.

POWER *of an Hyperbola*, is the ſixteenth part of the ſquare of the conjugate axis, or the one fourth part of the ſquare of the ſemi-conjugate axis, or it is equal to a rectangle under the one fourth of the tranſverſe axis, and one fourth part of the ſum of the tranſverſe axis and parameter.

POX, or SMALL-POX, *Variolæ*, in medicine, a contagious diſeaſe appearing on the ſurface of the ſkin, which it covers with puſtules, or ulcerous eruptions, that frequently leave ſcars behind them.

French POX, *Lues Venerea*, a malignant and putredinous dyſcraſy of all the humours, but eſpecially of the ſerum and lymph, ariſing from the venereal taint received into the body; or, according to Sydenham, when a gonorrhœa has continued a long while, or long enough for the poiſonous matter to make its way into the blood; or by aſtringents given unſeaſonably it cannot make its exit, then the patient is infected with the French Pox. See *Gonorrhœa*.

The buboes in the groin conſtitute the firſt degree of this diſtemper; then follow pains of the head, joints of the ſhoulders, arms, and ancles, coming on by fits, but at no certain intervals, unleſs in the night, when the patient is warm in bed. See *Bubo*.

There are alſo ſcabs and ſcurfs in various parts of the body, which are as yellow as a honeycomb; ſometimes they have large ſurfaces, anſwering the deſcription which authors give of the leproſy. All the ſymptoms gradually increaſe, eſpecially the pain, which becomes ſo intenſe that the patient is unable to lie in bed.

Afterward, nodes or exoſtoſes ariſe in the ſkull, ſhin-bones, and bones of the arms, which being attended with conſtant pain and inflammation, at length grow carious and putrefied. Phagedenic ulcers likewiſe ſeize various parts of the body, but generally firſt begin with the throat, and from thence gradually creep by the palate to the cartilage of the noſe, which they deſtroy, and the noſe being deſtitute of its prop, falls down flat. The ulcers and pains daily increaſing, the patient ſinks under the torment, and one member rotting away after another, is hurried into his grave.

The methods of curing the French pox are principally four: 1. The common one, by ſalivation. 2. By giving quickſilver-pills. 3. By mercurial frictions, which are to be purged off before a ſalivation is raiſed. And, 4. by ſweating, with a decoction of guaiacum. For the firſt of theſe methods, ſee *Salivation*.

The ſecond method of curing the French pox is by a quickſilver-pill. This was brought into reputation by Belloſte; and though he has kept the compoſition a ſecret, yet there is no reaſon to doubt but it is quickſilver mixed with a certain proportion of cathartic. Turner's imitation of this pill is as follows: take of quickſilver two drachms; turpentine, and pill of colocynth with aloes, of each half a drachm; of which make twelve pills. The quickſilver muſt be well incorporated with the turpentine till it becomes inviſible; and then the pill of colocynth with aloes to be added: ſometimes it will require a little crab's eyes, to give it a conſiſtence. If one of theſe pills be taken night and morning, after the two firſt days, it will give two or three ſtools a day, without gripes or ſickneſs. It may be proper, either night or morning, after the pill, to ſweat the patient with a pint of the ſtrong decoction of guaiacum, drank hot upon it. In the milder ſpecies of this diſeaſe, the patient is directed to obſerve no particular regimen, but may go about his affairs as uſual. The method of cure, as is allowed, may be preſcribed to very good purpoſe in this ſtubborn diſeaſe; but it is not thought ſo effectual as ſalivation; without which, Turner is of opinion that exoſtoſes and carious tophi cannot be cured.

The third method of curing the French pox is by mercurial frictions, which Deſault gives as follows: when the patient has a pox of a long continuance, and the venereal poiſon is diſperſed all over the body, he ſhould be prepared by bathing and drinking whey. But in a recent pox the bath is not neceſſary. After this, inſtead of raiſing a ſalivation, he brings on a flux of the belly, by means of clyſters of a decoction of ſena, and the pulp of caſſia, before the frictions are adminiſtered. When he finds that the looſeneſs does not anſwer the number of frictions, not the quantity of mercury made uſe of, he purges the patient with powder of jalap, and procures copious ſtools. While the looſeneſs is going on, the friction does the office of a purge; and in proportion as they are repeated, the flux of the belly revives; and when it ſlackens or ſtops, he has recourſe to the clyſters and purges of jalap. He purſues this method till the ſymptoms ceaſe, and till he is perſuaded, by the abundance of the evacuations, the venereal poiſon is entirely drained off By this means he carries off the pox and gonorrhœa at once. Dr. Douglas not only approved, but uſed this method with ſucceſs. The frictions are to be made with mercurial ointment, and one third of quickſilver, from two or three drams to an ounce or an ounce and a half, every night or every other night.

The fourth and laſt method of curing this diſtemper is with ſtrong decoctions of guaiacum. This we have the firſt account of, from Sir Ultic Hutton, who purſued it himſelf. A pound of guaiacum is to be boiled in a gallon of ſpring-water, to one half, and the ſcum reſerved to anoint the ſores; and a ſecond decoction is to be uſed for common drink. Boerhaave, who recommends this method, ſuppoſes that a ſalivation will be ineffectual, if every drop of fat in the blood is not melted down into water, and carried off; and the patient reduced to a death-like paleneſs. He likewiſe ſuppoſes that guaiacum performs its taſk by reſolving all the unctuous particles, whether incorporated in the maſs of blood, or accumulated in their proper repoſitories; and by emaciating the habit ſo exquiſitely, as not to leave one drop of oil therein. He directs the patient to keep in a room of ſuch a warmth, as that its mere heat will incline him to ſweat; he adviſes alſo, through the whole courſe of the cure, to abſtain from every thing that has the leaſt oilineſs in its nature, eating nothing but ſea buiſcuit and raiſins, and drinking only a weaker decoction of guaiacum. He muſt alſo drink eight ounces every day of the ſtrong decoction, the more the better, till ſome days his habit is bloated with it, as if he had the dropſy. After this, let the patient every morning drink faſting as much of the decoction as his ſtomach will hold, and place himſelf in an erect poſture in a ſweating-box; or if he lies a-bed, let a ſtove be put under it. In either place he muſt receive on his naked body the ſteam of kindled ſpirits of wine, and there let him ſweat as long and as plentifully as his ſtrength will allow. After he has ſuffered this heat for half an hour, let the flame be extinguiſhed, and the patient ſweat in his bed about half an hour longer. After which let him take eight or ten ounces of veal-broth boiled in a ſmall quantity of rice, but void of fat. His body muſt now be carefully wiped with warm dry flannel, after which let him riſe and drink of his decoction, as formerly, throughout the day. This muſt be done morning and evening, in every article, for fourteen days ſucceſſively; after this, in the morning fourteen days more.

PRACTICE, in arithmetic, *Practica Italica*, or Italian uſages, certain compendious ways of working the rule of proportion, or golden rule, eſpecially where the firſt term is one or unity. They were thus called from their expediting of practice and buſineſs, and becauſe firſt introduced by the merchants and negotiants of Italy.

The moſt uſeful of theſe practices are as follow:—1. Since the uſe of the rule of three is to find a fourth proportional to three given numbers, divide the firſt and ſecond, or the firſt and third, by ſome common number, if that can be done exactly; and work with the quantities in their ſtead; as in the following example:

Price of 3lb. is 9 ſhillings: What is
3) 1 3
the price of 7lb?
3
—
facit 21 ſhil.

Price of 14lb. is 26 ſhillings: What
7) 2 2) —
is the price of 7lb?
1
—
facit 13 ſhillings.

2. If the firſt term be 1, and the ſecond an aliquot part of a pound, ſhilling, or penny; divide the third by the aliquot part, the quotient is the anſwer.

Note, to find the aliquot part, thoſe who cannot do it otherwiſe, may ſee the table of aliquot parts of a pound in the table hereafter.

E. gr. If 1 ell coſt 10 ſhillings: What coſt 957 ells?
facit 478 l 10 ſhillings.

3. If the firſt or third number be 1; the other not exceeding large; and the middle term a compound, i. e. conſiſt of

ſeveral denominations, it may be wrought without reduction, thus:

Price of 1lb. is 3 s. 8d. 3 q. What is the price of 5lb? 5

18 s. 7 d. 3 q.

For, four farthings making a penny, 5 times 3 farthings make 3 d. 3 q, and 12 d. making 1 s. 5 times 8 pence make 3 s. 4 d. which, with the 3 d. from the place of farthings, make 3 s. 7 d. Laſtly, 5 times 3 ſhillings make 15, and with the 3 ſhillings from the place of pence is 18 s. the price required therefore is 18 s. 7 d. 3 q.

4. If the middle term be not an aliquot, but an aliquant part, reſolve the aliquant part into its aliquot parts; divide the middle term by the ſeveral aliquots, the ſum of the quotient is the anſwer. To find the aliquot parts contained in an aliquant, ſee the table of aliquant parts of a pound hereafter.

For an inſtance of this rule: If 1 ell coſt 15 ſhillings: What coſt 124 ells?

$\frac{1}{2}$ $\frac{1}{2}$) 62

$\frac{1}{4}$ 31

facit 93 l.

5. If the firſt or ſecond term be 1, and in the former caſe the ſecond or third, in the latter the firſt, be reſolvible in factors; the whole operation may be performed in the mind without writing down any figures, as in the following example:

Price of 1lb. is 24 ſhillings: What is
4
6
the price of 20lb.
4
80
6
facit 48: 0 s. — 24 l.

6. Where one of the given numbers is 1, we have ſeveral compendious uſages to ſave multiplication and diviſion. E. gr. If 9lb. coſt 20 ſhillings: What does 1lb. coſt?

It is obvious the ſum required is had by adding to the tenth part of 20 s. viz. 2 s. the ninth part of the tenth, viz. 3d. $\frac{1}{2}$, and $\frac{2}{9}$ of a penny; the anſwer therefore is 2 s. 3d. $\frac{1}{2}$ and $\frac{2}{9}$.

Again, if 5lb. coſt 64 s: What coſt 1lb.

Since 5 is half of 10, the double of the tenth part of the given price, viz. 10 s. 9 d. 3q. is the ſum required.

Again, if 1lb. coſt 18d: What will 19lb. coſt?

Since 19=20—1; from the given price doubled and increaſed by a cypher, viz. 360, ſubtract the ſimple 18; the remainder is 342 pence=28 s. 6d. the ſum required.

7. If two terms of the ſame denomination differ by an unit, we have a peculiar kind of compound, which will be clear from the following examples. E. gr. If 5lb. coſt 30 s: What will 4lb. coſt?

Since the price of 4lb is $\frac{1}{5}$ part ſhort of that of 5lb. divide the given price 30 by 5, the quotient 6 being ſubtracted from the dividend, the remainder, viz. 24 s. is the ſum required.

Again, if 8lb. coſt 24 s: What coſt 9 pounds?

Since the price of 9lb. exceeds that of 8 by $\frac{1}{8}$ part, divide the given price 24 by 8, and add the quotient 3 to the dividend; the ſum 27 is the anſwer.

8. Sometimes one may uſe ſeveral of theſe compends or practices in the ſame queſtion. E. gr. If 100lb. coſt 30 s. 4 d. What coſt 50lb. 50) 2.2

facit 15 s. 2d.

Again, if 60lb. coſt 4 s: What coſt 2520lb? 6
42
24
6
7
7
168 l

A table of the aliquot parts of a pound or 20 s. are,

10 s.	make half of 20s.
5 s.	a fourth.
4 s.	a fifth.
2 s.	a tenth.
1 s.	a twentieth.
6 s. 8 d	a third.
3 s. 4 d.	a ſixth.
2 s. 6 d.	an eighth.
1 s. 8 d.	a twelfth.
1 s. 4 d.	a fifteenth.
1 s. 3 d.	a ſixteeeth.
10 d.	a twenty-fourth.
5 d.	a forty-eighth.

To multiply by aliquot parts, ſee the article *Multiplication.*

A table of the aliquant parts of a pound or 20 s. are,

3 s. an aliquant part compoſed of a 10th and 20th.

6 s. of

6 s. of a fifth and tenth.
7 s. of a fourth and tenth.
8 s. of two fifths.
9 s. of a fourth and fifth.
11 s. of a half and a 20th.
12 s. of a half and a 10th.
14 s. of a half and a 5th.
15 s. of a half and a 4th.
16 s. of a half, a 5th, and 10th.
17 s. of a half, a 4th, and 10th.
18 s. of a half and two 5ths.
19 s. of a half, a 4th, and a 5th.

To multiply by aliquant parts, ſee *Multiplication.*

PRAGMATIC SANCTION, in the civil law, is defined by Hottoman to be a reſcript, or anſwer of the ſovereign, delivered by advice of his council, to ſome college, order, or body of people, upon conſulting him on ſome caſe of their community. The like anſwer given to any particular perſon, is called ſimple reſcript. The term pragmatic ſanction, is chiefly applied to a ſettlement of Charles VI. emperor of Germany, who, in the year 1722; having no ſons, ſettled his hereditary dominions on his eldeſt daughter, the archducheſs Maria Thereſa, which was confirmed by the diet of the empire, and guarantied by Great-Britain, France, the States-General, and moſt of the powers in Europe.

* PRAGUE, a large handſome city of Germany, is ſeated on the river Moldaw, in the centre of Bohemia, of which it is the capital. It comprehends three towns, the old, the new, and the little city, which are about 15 miles in circumference. It is built on ſeven hills, from the tops of which are fine proſpects, and contains a vaſt number of houſes and inhabitants, there are above 100 churches and as many palaces. The Moldaw, which croſſes Prague, ſeparates the ſmall town from the old and new; and the bridge which is over the river is built of free-ſtone, with 18 arches, and is 34 feet wide, and 1770 long, with a ſtrong tower at each end, and handſome ſtatues on the ſides. Old Prague is ſeated on the ſide of the river, and is very populous: the houſes are high, and the ſtreets narrow. The chief ornament of this part is the univerſity; and the Jeſuits college; likewiſe in this part is the abode of the Jews, who have nine ſynagogues. The new town ſurrounds the old, and contains magnificent buildings, handſome churches, and wide ſtreets. Little Prague is the moſt ancient of the three. One part of this town is built in a bottom, and the other upon a mountain, and contains 52 palaces of the nobility; ſome of which have greatly ſuffered in the late ſieges. The French and Bavarians took it by ſtorm in November 1741. It ſurrendered after a long ſiege and blockade, to the Auſtrians in January 1743. In 1744, the king of Pruſſia ſent an army of 80,000 men againſt it, when the city was bombarded and cannonaded with ſuch fury, that it could not hold out above ſix days, and the whole garriſon were made priſoners of war. But were obliged to abandon it the ſame year. In 1757, the king of Pruſſia beſieged it again, but without ſucceſs, and ſoon after loſt a battle near this place. Prague is 152 miles N. W. of Vienna, and 75 S. E. of Dreſden, Long. 14. 20. E. Lat. 50. 0. N.

* PRAGUE, ſiege of. The king of Pruſſia, immediately after his victory at Auwal, inveſted Prague. About forty thouſand of the enemy took refuge in it, the reſt fled different ways. The king of Pruſſia loſt no time to inveſt the place, and to cut off all ſuccours. If on one hand ſuch an immenſe garriſon made an attack unadviſeable, on the other, that formidable number itſelf ſeemed to make the reduction of the place by famine the more certain. The king of Pruſſia not relying ſolely on this, prepared to bombard the town. On the twenty-ninth of May 1757, at midnight, after a moſt dreadful ſtorm of rain and thunder, as if it were to diſplay how much more ruinous the malice of men may be, than the greateſt terrors of nature, on the ſignal of a rocket, four batteries, which diſcharged every twenty-four hours two hundred and eighty eight bombs, beſides a vaſt multitude of red hot balls, began to pour deſtruction on that unfortunate city, which was ſoon in flames in every part. The garriſon made a vigorous defence, and one well conducted and deſperate ſally: but they were repulſed with great loſs. The principal magiſtrates, burghers, and clergy, ſeeing their city on the point of being reduced to an heap of rubbiſh, made the moſt moving ſupplications to the commander to liſten to terms. The commander was deaf to their prayers. Twelve thouſand of the moſt uſeleſs mouths were driven out of the city. The Pruſſians forced them in again. The affairs of the empreſs ſeemed verging to inevitable deſtruction, a whole army was upon the point of ſurrendering priſoners of war; the capital of Bohemia

on the point of being taken, and with it all the reſt of that flouriſhing kingdom. The ſanguine friends of the king of Pruſſia began to compute the diſtance to Vienna. However, in conſequence of the battle of Collin, he was obliged to raiſe the ſiege.

PRAME, among ſailors, a ſort of lighter employed in different parts of the Baltic ſea, to load and deliver ſhips.

PRASIUS, PRASITES, in natural hiſtory, the name of a gem much approaching to the nature of the emerald, but wanting its hardneſs, and being of a coarſer green, with an admixture of yellow.

PRATIQUE, or PRATTIC, in commerce, a negociation, or communication, of commerce, which a merchant veſſel obtains in the port it arrives in, and the countries it diſcovers: hence to obtain a pratique, is to obtain a liberty to frequent a port, to go aſhore, to buy and ſell, &c.

Pratique is particularly uſed for a licence to traffic, granted to the maſter of a ſhip in the ports of Italy upon a bill of health; that is, a certificate that the place whence he came is not annoyed with any infectious diſeaſe.

PRAYER, in theology, a petition to God, either for the obtaining ſome future favour, or the returning thanks for a paſt one. Divines diſtinguiſh three kinds of prayer; vocal, which is cloathed in words and ſounds, to be uttered by the mouth; mental, which is only formed or conceived in the mind, and not delivered in words; and ejaculatory, which is a ſhort ſudden flight, without ſtudy, order, or method. Among us prayer is moſt frequently conſidered under the diviſions of preconceived and extemporary: under the firſt come all ſet forms, whether public or private, by which the mind is directed in the order, manner, expreſſion, &c. of its petitions; the ſecond is that where the mind is left to itſelf, and its own conduct, both as to matter, manner, words, &c.

PREACHING, in theology, the promulgation of the word of God in public: or the making a ſermon, or public oration on ſome paſſage in the ſacred Scriptures, in order to inform the judgment and mend the lives of the hearers.

PREADAMITE, a denomination given to the inhabitants of the earth, who, according to ſome people, lived before Adam. Iſaac de Pereyra, in 1655, publiſhed a book, in which he attempted to prove that the Jews alone were deſcended from Adam; and that the Gentiles, whom he called Preadamites, lived long before Adam: this book was anſwered by Demarets, profeſſor of theology at Groningen.

PREAMBLE, in law, the beginning of an act of parliament, &c. which ſerves to open the intent of the act, and the miſchiefs intended to be remedied by it.

PREBEND, the maintenance a prebendary receives out of the eſtate of a cathedral or collegiate church. Prebends are diſtinguiſhed into ſimple and dignitary: a ſimple prebend has no more than the revenue for its ſupport; but a prebend with dignity, has always a juriſdiction annexed to it.

PREBENDARY, an eccleſiaſtic who enjoys a prebend.

The difference between a prebendary and a canon is, that the former receives his prebend, in conſideration of his officiating in the church; but the latter merely by his being received into the cathedral or college.

Golden PREBENDARY *of Hereford*, called alſo *Prebendarius Epiſcopus*, is one of the twenty-eight minor prebendaries, who has, *ex officio*, the firſt canon's place that falls. He was anciently confeſſor of the biſhop and cathedral, and had the offerings at the altar; on which account he was called the golden prebendary.

PRECEDENCE, or PRECEDENCY, a place of honour to which a perſon is entitled: this is either of courteſy or of right. The former is that which is due to age, eſtate, &c. which is regulated by cuſtom and civility: the latter is ſettled by authority, and when broken in upon gives an action at law.

PRECEDENT, in law, a caſe which has been determined by the court, and which ſerves as a rule for all of the ſame nature: thus the precedents of a court will reverſe a judgment contrary to many precedents.

PRECENTOR, a dignitary in cathedrals, popularly called the chantor, or maſter of the choir.

PRECEPT, in law, a command in writing ſent by a chief juſtice, juſtice of the peace, &c. for bringing a perſon, record, or other matter, before him.

PRECESSION, *Preceſſio*, in aſtronomy, a term applied to a ſlow motion of the equinoctial points towards the weſt;

weſt : that is, in the language of aſtronomers, *in antecedentia*, or contrary to the order of the ſigns.

PRECIPITANT, *Præcipitans*, in chemiſtry, is applied to any liquor, which, when poured on a ſolution, ſeparates what is diſſolved, and makes it precipitate, or fall to the bottom of the veſſel.

PRECIPITATE, *Præcipitatus*, in chemiſtry, a ſubſtance which having been diſſolved in a proper menſtruum, is again ſeparated from its ſolvent, and thrown down to the bottom of the veſſel, by pouring ſome other liquor upon it.

PRECIPITATION, *Precipitatio*, a proceſs in chemiſtry, which is a kind of ſeparation, whereby the particles of a body diſſolved and ſuſpended in any menſtrous liquor, are detached therefrom, and fall down to the bottom of the veſſel. Theſe particles ſometimes precipitate of their own accord, but oftener by the aſſiſtance of ſome other liquor added to the menſtruum. So that precipitation is the reſeparating ſolid bodies from any fluid menſtruum, wherein they are diſſolved, by the addition of a third body, which counteracting the power of the menſtruum, cauſes that which was diſſolved to regain its ſolid form, and ſubſide in the ſtate of a powder.

PRECONTRACT, in law, a contract made before another, chiefly applied to marriage contracts.

PRECORDIA, *Præcordia*, in anatomy, a general name for the parts ſituated about the heart, in the fore-part of the thorax ; as the diaphragm, pericardium, and even the heart itſelf, with the ſpleen, lungs, &c.

PREDESTINATION, in general, ſignifies a decree of God, whereby from all eternity he ordained ſuch a concatenation of cauſes as muſt produce every event by a kind of fatal neceſſity, notwithſtanding any oppoſition.

Nothing has occaſioned more diſputes than this thorny ſubject of predeſtination ; the Lutherans ſpeak of it with horror, whilſt the Calviniſts contend for it with great zeal ; the Moliniſts and Jeſuits preach it down as a moſt dangerous doctrine, whilſt the Janſeniſts aſſert it as an article of faith ; the Arminians, Remonſtrants, and Pelagians are all avowed enemies to predeſtination.

PREDETERMINATION, in philoſophy, that concurrence of God, which determines men in all their actions, both good and evil ; and this concurrence, or influence, is called phyſical predetermination, or premotion ; for divines maintain, that God has no ſhare in the ſins of mankind, inaſmuch as he only affords his concurrence to the phyſical part of their actions, not to the moral part.

PREDIAL TITHES, thoſe that are paid of things ariſing and growing from the ground only ; as corn, hay, fruit, &c.

PREDICABLE, among logicians, denotes a general quality which may be predicated, or aſſerted of ſeveral things : thus animal is predicable of mankind, beaſts, birds, fiſhes, &c.

PREDICAMENT, among logicians, the ſame with category. See *Category*.

PREDICATE, *Prædicatum* in logic, that part of a propoſition which affirms or denies ſomething of the ſubject : thus, in theſe propoſitions, *ſnow is white*, *ink is not white*, whiteneſs is the predicate which is affirmed of ſnow, and denied of ink.

PREDICTION, *Prædictio*, the foretelling of what is to come, either by divine revelation, art, or conjecture.

PREDOMINANT, that which prevails, or has ſome ſuperiority, over another thing.

PREENING, in natural hiſtory, the action of birds dreſſing their feathers, to enable them to glide the more readily through the air, &c. For this purpoſe they have two peculiar glands on their rump, which ſecrete an unctous matter into a bag that is perforated, out of which the bird occaſionally draws it with its bill.

PRE-EXISTENCE, the ſtate of a thing actually in being before another.

PREFACE, ſomething introductory to a book, to inform the reader of the deſign, method, &c. obſerved therein ; and generally whatever is neceſſary to facilitate the underſtanding of a book.

PREGNANCY, the ſtate of a woman who has conceived, or is with child.

PRELATE, an eccleſiaſtic raiſed to ſome eminent and ſuperior dignity in the church ; as biſhops, archbiſhops, patriarchs, &c.

PRELIMINARY, in general, denotes ſomething to be examined and determined, before an affair can be treated of to the purpoſe.

PRELUDE, in muſic, is uſually a flouriſh or irregular air, which a muſician plays off-hand, to try if his inſtrument be in tune, and ſo lead him into the piece to be played.

PREMISES, or PREMISSES, in logic, an appellation given to the two firſt propoſitions of a ſyllogiſm, as going before, or preceding the concluſion.

PREMISES, in law, properly ſignifies the land, &c. mentioned in the beginning of a deed.

PREMIUM, or PRÆMIUM, properly ſignifies a reward or recompence; but it is chiefly uſed in a mercantile ſenſe for the ſum of money given to an inſurer whether of ſhips, houſes, lives, &c.

PREMUNIRE, or PRÆMUNIRE, in law, is taken two ways; either for a writ, or for the offence for which it is granted. Formerly the church of Rome carried its pretended right of ſupremacy to ſuch a height, that ſeveral ſtatutes were made to check and reſtrain the growing power of the pope; but more eſpecially ſtat. 16 Rich. II. c. 5. commonly known by the name of the ſtatute of premunire, which ordains the puniſhment of offenders on this ſtatute to be this: that they ſhould be out of the king's protection, attached by their bodies, i. e. impriſoned at the king's pleaſure, and loſe their lands, goods, and chattels.

Premunire is now chiefly uſed for the above puniſhment, which is incurred not only by thoſe who aſſert the pope's ſupremacy; but alſo by thoſe who refuſe to take the oath of allegiance, or of the king's ſupremacy, &c.

It is ſaid no perſon, who has incurred a premunire, can bring any action; and a writ of premunire lies as well for a party grieved, as for the king; but the laws making offences a premunire are ſo very ſevere, that they are ſeldom put in execution.

PREPARATION, in anatomy, the art of preſerving the parts of animals for anatomical uſes; which is done either by drying them thoroughly, or putting them in a proper liquor.

PREPOSITION, *Prepoſitio*, in grammar, one of the parts of ſpeech, being an indeclinable particle, which yet ſerves to govern the nouns that follow it; ſuch as *per*, *pro*, *propter*; and *through*, *for*, *with*, &c.

PREPUCE, in anatomy, the foreſkin; being a prolongation of the cutis of the penis, covering the glans.

PREROGATIVE, a pre-eminence which one perſon has over another.

PREROGATIVE *of the King*, that power which the king hath, not only over other perſons, but over the ordinary courſe of the common law, in right of his crown.

PREROGATIVE *Court*, a court belonging to the archbiſhop of Canterbury, wherein wills are proved and adminiſtration granted that belong to the archbiſhop by his prerogative; that is, where the party, at his death, had five pounds, or upwards, out of the dioceſe where he died, and within the archbiſhop's province.

PRESAGE, *Præſagium*, in antiquity, denotes an augury, or ſign of ſome future event; which was chiefly taken from the flight of birds, the entrails of victims, &c.

PRESBYTA, πρεσβυτης, in optics, a perſon whoſe eyes being flat, can ſee diſtant objects diſtinctly, but thoſe near confuſedly: which defect of ſight got this appellation, becauſe old people are naturally ſubject to it.

Spectacles, or convex glaſſes, are the only remedy for this defect; for if theſe are well fitted to the degree of flatneſs of the eyes, they cauſe the rays of light to converge in ſuch a manner from near objects, as to make them fall exactly on the retina, and thereby produce diſtinct viſion. See the article *Viſion*.

PRESBYTER, in the primitive chriſtian church, an elder, one of the ſecond order of eccleſiaſtics; the other two being biſhops and deacons.

PRESBYTERIANS, a ſect of proteſtants, ſo called from their maintaining that the government of the church appointed in the New Teſtament was by preſbyteries; that is, by miniſters and ruling elders, aſſociated for its government and diſcipline.

PRESCIENCE, in theology, foreknowledge, or the knowledge which God has of events before they come to paſs.

PRESCRIPTION, in law, is a right or title acquired by uſe and time, introduced for aſſuring the property of effects in favour of perſons who have for a certain time had them in their poſſeſſion.

PRESCRIPTION, in medicine, is the aſſigning a proper and adequate remedy to a diſeaſe, from an examination of its ſymptoms, and an acquaintance with the virtues and effects of the materia medica.

PRESENT, *Præſens*, in grammar, the firſt tenſe of a verb, expreſſing the preſent time, or that ſomething is now performing; as *ſcribo*, I write, or am writing. See *Tenſe*.

PRESENTATION, in law, the act of a patron offering his clerk to be inſtituted in a benefice of his gift, the ſame being void.

PRESENTEE, the clerk preſented to a benefice by the patron.

PRESENTMENT, in law, a denunciation of jurors, or a juſtice of the peace, or other officers, without information of an offence inquirable by the court, to which it is preſented; or it may be ſaid to be an information made by the jury in a court before a judge, who has authority to puniſh any offence committed contrary to law; and it is what the grand jury finds and preſents to the court; without any bill of indictment delivered; yet it is afterwards reduced into the form of an indictment.

PRESERVATIVE, among phyſicians, denotes a medicine taken by way of precaution; or, to ſecure a man from a diſeaſe that threatens him.

PRESIDENT, *Præſes*, an officer created or elected to preſide over a company, in contradiſtinction to the other members, who are called reſidents.

PRESS, *Prelum*, in the mechanic arts, a machine of wood, or iron, ſerving to ſqueeze any body very cloſe.

Preſſes uſually conſiſt of ſix pieces; two flat ſmooth planks, between which the things to be preſſed are laid; two ſcrews or worms faſtened to the lower plank, and paſſing through two holes in the upper; and two nuts in form of an S, that ſerve to drive the upper plank, which is moveable, againſt the lower, which is fixed.

Presses *uſed for expreſſing Liquors*, are in moſt reſpects the ſame with the common preſſes, only the under plank is perforated with a great number of holes for the juice to run through. Others have only one ſcrew, or arbor, paſſing through the middle of the moveable plank, which deſcends into a kind of ſquare box, full of holes, through which the juices flow as the arbor is turned.

Press *uſed by Joiners*, to keep cloſe the pannels, &c. of wainſcot, conſiſts of two ſcrews, and two pieces of wood, four or five inches ſquare, and two or three feet long, whereof the holes at two ends ſerve for nuts to the ſcrews.

Press *uſed by Inlayers* reſembles the joiners preſs, only the pieces of wood are thicker, and only one of them moveable; the other, which is in form of a treſſel, being ſuſtained by two legs joined into it at each end. This ſerves for ſawing and cleaving of wood required in marquetry.

Founders Press, is a ſtrong ſquare frame, conſiſting of four pieces of wood firmly joined together with tenons, &c. It is of various ſizes: two of them are required to each mould, at the two extremes whereof they are placed; ſo as that, by driving wooden wedges between the mould and ſides of the preſs, the two parts of the mould for the metal may be preſſed cloſe together. See the article *Foundery*.

The book-binders preſs conſiſts of two large wooden cheeks joined by two ſtrong wooden ſcrews; which being turned by an iron bar, draw together or ſet aſunder the cheeks at pleaſure.

Press, in the woollen manufactory, is a large wooden machine, ſerving to preſs cloths, ſerges, &c. to render them ſmooth, and give them a gloſs.

Press *for Linens, Silks*, &c. is called a calender.

For the *Rolling and Printing* Press, ſee the article *Printing*.

PRESSING, in the manufactures, is the violently ſqueezing a cloth, ſtuff, &c. to render it ſmooth and gloſſy.

PRESSURE, or PRESSION, in general, denotes the ſqueezing a thing cloſe together.

PREST, a duty in money paid by the ſheriff upon his account in the exchequer, for money remaining in his hands.

PREST-MONEY, the money given to new-liſted ſoldiers, ſo called becauſe it binds thoſe who receive it to be ready at all times.

PRESTATION, ſignifies the payment of a certain ſum by arch-deacons, and other clergymen, annually to their biſhop.

PRESTO, in the Italian muſic, intimates to perform very quick, as *preſtiſſimo* does extremely ſo.

PRESUMPTION, in law, ſignifies an opinion or belief of a thing.

PRESUMPTIVE HEIR, the ſame with heir at law. See *Heir*.

PRETERIT, in grammar, a tenſe which expreſſes the time paſt, or an action completely finiſhed; as, *ſcripſi*, I have wrote.

PRETEXT, a colour or motive, whether real or feigned, for doing ſomething.

PRETOR, or PRÆTOR, a magiſtrate among the ancient Romans, not unlike our lord chief juſtices, or lord chancellor, or both in one, as being veſted with the power of diſtributing juſtice among the citizens.

PRETORIAN GUARDS, *Prætoriæ Cohortes*, in Roman antiquity, were the emperor's guards, who at length were increaſed to ten thouſand; they had this denomination, according to ſome, from their being ſtationed at a place in the palace called *Pretorium*: their commander was ſtyled *Præfectus prætorii*.

PRETORIUM, *Prætorium*, among the Romans, denoted the hall or court wherein the pretor lived, and wherein he adminiſtered juſtice.

PRIAPISM, in medicine, a continual and painful erection of the penis.

PRIAPUS, in medicine, denotes the genital parts in men.

It denotes, in antiquity, a fabulous deity, revered very much for the extraordinary ſize of his parts.

PRIEST, a perſon ſet apart for the performance of ſacrifice, and other offices of religion.

Priest, in the Chriſtian church, is a perſon inveſted with holy orders, in virtue of which he has a power to preach, marry, adminiſter the ſacraments, &c.

PRIMÆ VIÆ, among phyſicians, denote the whole alimentary duct; including the œſophagus, ſtomach, and inteſtines, with their appendages.

PRIMAGE, in commerce, a ſmall duty at the water-ſide, due to the maſter and mariners of a ſhip; to the maſter, for the uſe of ropes, &c. to diſcharge the goods; and to the mariners, for the loading or unloading of the veſſel.

PRIMARY PLANET, in aſtronomy, one that revolves round the ſun as a center.

PRIMATE, in church-polity, an arch-biſhop who is inveſted with a juriſdiction over other biſhops.

PRIME, an appellation given to whatever is firſt in order, degree, or dignity, among ſeveral things of the ſame or like kind; thus, we ſay, the prime miniſter, prime ſerjeant, prime coſt, &c.

Prime is ſometimes uſed to denote the ſame with decimal, or the tenth part of an unit. See the article *Decimal*.

Prime *Vertical*, is that vertical circle which paſſes through the poles of the meridian, or the eaſt and weſt points of the horizon; whence dials projected on the plane of this circle are called prime vertical, or north and ſouth dials.

PRIMING, or *Prime of a Gun*, is the gunpowder put into the pan or touch-hole of a piece, to give it fire thereby. And this is the laſt thing done in charging.

Priming, among painters, ſignifies the laying on of the firſt colour.

PRIMITIÆ, the firſt fruits gathered of the earth, of which the ancients made preſents to the gods.

PRIMITIVE, in grammar, a root or original word in a language, in contradiſtinction to derivative: thus, *God* is a primitive, *godly* derivative, and *god-like* a compound.

PRIMOGENITURE, *Primogenitura*, the right of firſt-born.

PRINCE, *Princeps*, in polity, a perſon inveſted with the ſupreme command of a ſtate, independent of any ſuperior.

Prince alſo denotes a perſon who is a ſovereign in his own territories, yet holds of ſome other as his ſuperior.

Prince *of the Senate*, in old Rome, the perſon who was called over firſt in the roll of ſenators, whenever it was renewed by the cenſors. He was always of conſular and cenſorian dignity.

PRINCE'S FEATHER, in botany, the ſame with amaranth. See *Amaranthus*.

PRINCIPAL, *Principalis*, the chief and moſt neceſſary part of a thing.

In commerce, principal is the capital of a ſum due or lent, ſo called in oppoſition to intereſt.

It alſo denotes the firſt fund put by partners into a common ſtock, by which it is diſtinguiſhed from the calls or acceſſions afterwards required.

Principal Point, in perſpective, a point in the perſpective plane, upon which a line drawn from the eye perpendicular to the plane falls. It is in the interſection of the horizontal and vertical plane, and called the point of ſight and point of the eye.

Principal Ray, in perſpective, that which paſſes perpendicularly from the ſpectator's eye to the perſpective plane.

PRINCIPLE, in general, is uſed for the cauſe, ſource, or origin of any thing.

PRINCIPLES, in phyſics, are often confounded with elements, or the firſt and ſimpleſt parts whereof natural bodies are compounded, and into which they are again reſolvable by the force of fire. See *Element*.

PRINT, the impreſſion taken from a copper-plate.

A print may be taken off, ſo as that the out-lines and principal ſtrokes may be exactly copied for graving, in the following manner. If the print be not above a year or two old, the paper need only be well moiſtened with water, as for printing; but if it be more ancient, it ſhould be laid to ſoak all night in water, and afterwards hung in the air till it becomes dry enough for the preſs. The paper thus prepared is to be laid with its printed ſide next the plate, thinly caſed over with white wax; and is thus to be communicated to the rolling-preſs, whereby an impreſſion of the cut will be gained.

PRINTER, one who compoſes and takes impreſſions from moveable characters ranged in order, or from plates engraven, by means of ink, and a preſs; or from blocks of wood cut in flowers, &c. and taken off in various colours on calicoes, linens, ſilks, &c.

PRINTING, the art of taking impreſſions from characters or figures moveable, or immoveable, on paper, linen, ſilk, &c. There are three kinds of printing; the one from moveable letters for books; the other from copper-plates for pictures; and the laſt from blocks, in which the repreſentation of birds, flowers, &c. are cut for printing callicoes, linens, &c. the firſt called common preſs-printing, the ſecond rolling-preſs-printing, and the laſt calicoe, &c. printing. The principal difference between the three conſiſts in this, that the firſt is caſt in relievo in diſtinct pieces, the ſecond engraven in creux, and the third cut in relievo, and generally ſtamped, by placing the block upon the material to be printed, and ſtriking upon the back of it.

Progreſs of PRINTING. As the Grecian cities contended for the birth of Homer, ſo do the German printers for that of printing. Mentz, Haerlem, and Straſburg, are the warmeſt on this point of honour, and theſe are left in poſſeſſion of the queſtion, which is not yet decided; though it muſt be owned that Mentz has always had the majority of voices. John Guttemburg, and John Fuſt, of Mentz; John Meutel, of Straſburg, and L. John Koſter of Haerlem, are the perſons to whom this honour is ſeverally aſcribed, by their reſpective countrymen; and they have all their advocates among the learned. However, their firſt eſſays were made on wooden blocks, after the Chineſe manner. The book at Haerlem, the vocabulary called Catholicon, and the pieces in the Bodleian library, and that of Bennet-college, are all performed in this way; and the impreſſion appears to have been only given on one ſide of the leaves; after which the two blank ſides were paſted together. But they ſoon found the inconviencies of this method, and therefore bethought themſelves of an improvement, which was, by making ſingle letters diſtinct from one another, and theſe being firſt done in wood, gave room for a ſecond improvement, which was the making them of metal; and, in order to that, forming moulds, matrices, &c. for caſting them. See *Letter*.

From this ingenious contrivance we ought to date the origin of the preſent art of printing, contradiſtinguiſhed from the method practiſed by the Chineſe. And of this Shoeffer, or Scheffer, firſt ſervant, and afterwards partner and ſon-in-law of Fuſt, at Mentz, above-mentioned, is pretty generally allowed to be the inventor; ſo that he may properly be reckoned the firſt printer, and the bible, which was printed with moveable letters in 1450, the firſt printed book; the next was Auguſtine *De Civitate Dei*, then Tully's Offices, printed about the year 1461. In theſe books they left the places of the initial letters blank, and gave them to the illuminers, to have them ornamented and painted in gold and azure, in order to render the work more beautiful, and, as ſome think, to make their books paſs for manuſcripts. Thus at preſent, in ſome curious works, the initial letter at the beginning of a book, or chapter, is ſometimes left out, and a ſpace is left for its being afterwards printed with various ornaments from a copper-plate.

Some authors tell us, that Fuſt carrying a parcel of bibles with him to Paris, and offering them to ſale as manuſcripts, the French, upon conſidering the number of books, and their exact conformity to each other, even to a point, and that it was impoſſible for the beſt book-writers to be ſo exact, concluded there was witchcraft in the caſe; and, by their actually indicting him as a conjurer, or threatening to do ſo, extorted from him the ſecret: and hence the origin of the popular ſtory of Dr. Fauſtus.

From Mentz, the art of printing ſoon ſpread itſelf throughout a good part of Europe; Haerlem and Straſburg had it very early; which, as the current of authors repreſent it, occaſioned their pretending to the honour of the invention. From Haerlem it paſſed to Rome in 1467; and into England in 1468, by means of Tho. Bourchier, archbiſhop of Canterbury, who ſent W. Turner, maſter of the robes, and W. Caxton, merchant, to Haerlem, to learn the art. Theſe privately prevailing with Corſeilles, an under workman, to come over, a preſs was ſet up at Oxford, and an edition of Ruffinus on the creed was printed the ſame year in octavo. From Oxford, Caxton brought it to London about the year 1470, and the ſame year it was carried to Paris. Hitherto there had been nothing printed but in Latin, and the vulgar tongues, and this firſt in Roman characters, then in Gothic, and at laſt in Italic; but in 1480, the Italians caſt a ſet of Greek types, and they have alſo the honour of the firſt Hebrew editions, which were printed about the ſame time with the Greek. Towards the end of the ſixteenth century there appeared various editions of books in Syriac, Arabic, Perſian, Armenian, Coptic, or Egyptian characters, ſome to gratify the curioſity of the learned, and others for the uſe of the Chriſtians of the Levant. Out of Europe the art of printing has been carried into the three other parts of the world. For Aſia we ſee impreſſions of books at Goa, and in the Phillippines; at Morocco, for Africa; at Mexico, Lima, Philadelphia, New-York, Boſton, *&c.* for America. The Turks, indeed, rigorouſly prohibit printing throughout their empire, as imagining that the too frequent communication with books might occaſion ſome change in their religion and government; yet the Jews have ſeveral editions of their books printed at Theſſalonia, and even at Conſtantinople.

Chineſe PRINTING is performed from wooden planks or blocks, cut like thoſe uſed in printing of callico, paper, cards, &c.

Rolling Preſs PRINTING is employed in taking off prints or impreſſions from copper-plates engraven, etched, or ſcraped, as in mezzotintos. This art is ſaid to have been as ancient as the year 1540, and to owe its origin to Finiguerra, a Florentine goldſmith, who pouring ſome melted brimſtone on an engraven plate, found the exact impreſſion of the engraving left in the cold brimſtone, marked with black taken out of the ſtrokes by the liquid ſulphur: upon this he attempted to do the ſame on ſilver plates with wet paper, by rolling it ſmoothly with a roller; and this ſucceeded: but this art was not uſed in England till the reign of king James I. when it was brought from Antwerp by Speed.

The ink uſed for copper-plates is a compoſition made of the ſtones of peaches and apricots, the bones of ſheep, and ivory, all well burnt, and called Frankfort black, mixed with nut-oil that has been well boiled, and ground together on a marble, after the ſame manner as painters do their colours.

* PRIOR, MATTHEW, an elegant and celebrated Engliſh poet, was the ſon of Mr. George Prior, a citizen and joiner of London, where he was born in 1664. His father dying while he was young, he was left to the care of his uncle, a vintner, who behaved to him with the tenderneſs of a parent. He had him educated at Weſtminſter-ſchool, after which he took him home, intending to bring him up to his own buſineſs. But he ſtill proſecuted the ſtudy of the claſſics at his leiſure hours, and particularly his favourite, Horace; by which means he was ſoon taken notice of by the polite company who reſorted to his uncle's houſe. One day, as the earl of Dorſet, with ſeveral other perſons of rank, were at this tavern, the diſcourſe turned upon the Odes of Horace, and the company being divided in their opinions about a paſſage in that poet, one of the gentlemen ſaid, "We are not like to agree in our criticiſms, but if I am not miſtaken, there is a young fellow in the houſe who is able to ſet us all right:" upon which he named Mr. Prior, who was immediately ſent for, and deſired to give his opinion of Horace's meaning in the ode under debate. This he did with great modeſty, and ſo much to the ſatisfaction of the company, that the earl of Dorſet determined to remove him to a more agreeable ſtation; and accordingly had him ſent to St. John's college in Cambridge, where he at length became fellow of that college. He there contracted an intimate friendſhip with Charles Montague, afterwards earl of Halifax, in conjunction with whom he wrote a very humourous piece, intitled the Hind and the Panther tranſverſed to the ſtory of the Country Mouſe and City Mouſe, in anſwer to Mr. Dryden's poem called the Hind and Panther. Upon the revolution, Mr. Prior was brought to court by the earl of Dorſet, and 1690 was made ſecretary to the earl of Berkeley, plenipotentiary for king William and queen Mary at the congreſs at the Hague; and afterwards appointed ſecretary to the earls of Pembroke and Jerſey, and Sir William Williamſon, ambaſſadors and plenipotentiaries at the treaty of Ryſwick in

1697; as he was likewiſe in 1698 to the earl of Portland, ambaſſador to the court of France. While he was in that kingdom, one of the officers of the French king's houſhold, ſhewing him the royal apartments at Verſailles, and particularly the paintings of Le Brun, in which are repreſented the victories of Lewis XIV. aſked him whether king William's actions were alſo to be ſeen in his palace? "No, Sir," anſwered Mr. Prior, "the monuments of my maſter's actions are to be ſeen every where but in his own houſe." In 1697 he was made ſecretary of ſtate for Ireland, and in 1700 was appointed one of the lords commiſſioners of trade and plantations, and was choſen member of parliament for Eaſt Grinſtead in Suſſex. In 1711 he was made one of the commiſſioners of cuſtoms, and ſent miniſter plenipotentiary into France, for negotiating a peace with that kingdom: but the year after Geo. I. came to the throne, he was recalled from France, and upon his arrival was taken up by a warrant from the houſe of commons, and ſoon after ſtrictly examined by a committee of the privy-council. Robert Walpole, Eſq; then moved the houſe of commons for an impeachment againſt him, and he was ordered into cuſtody: but though he was one of the perſons excepted out of the act of grace which paſſed in 1717, he was at the cloſe of that year diſcharged from his confinement; upon which he ſpent the remainder of his days in tranquility and retirement, chiefly at his eſtate at Downhall in Eſſex. He died at the earl of Oxford's ſeat at Wimpole in Cambridgeſhire, the 18th of September 1721, and was interred in Weſtminſter Abbey, where a monument is erected to his memory.

PRIOR, in general, ſomething before or nearer the beginning than another, to which it is compared.

PRIOR, more particularly, denotes the ſuperior of a convent of monks, or the next under the abbot.

Grand PRIOR is the ſuperior of a large abbey, where ſeveral ſuperiors are required.

PRISM, *Priſma*, in geometry, an oblong ſolid contained under more than four planes, whoſe baſes are equal, parallel, and alike ſituated.

PRISM, in dioptrics, a triangular glaſs priſm, much uſed in experiments about the nature of light and colours.

PRISMOID, in geometry, a ſolid figure, bounded by ſeveral planes, whoſe baſes are right-angled parallelograms, parallel, and alike ſituated.

PRISON, a gaol, or place of confinement. See *Gaol*.

PRISONER, a perſon reſtrained or kept in priſon upon an action civil or criminal, or upon commandment: and one may be a priſoner on matter of record or matter of fact. A priſoner upon matter of record is he who being preſent in court, is by the court committed to priſon; and the other is one carried to priſon upon an arreſt, whether it be by the ſheriff, conſtable, or other officer.

PRIVATEERS, in maritime affairs, a kind of private ſhips of war, fitted out by private perſons at their own expence, who have leave granted them to keep what they can take from the enemy, allowing the admiral his ſhare.

PRIVATION, in general, denotes the abſence or want of ſomething; in which ſenſe darkneſs is only a privation of light.

PRIVATIVE, in grammar, a particle which, when prefixed to a word, changes it into a contrary ſenſe.

Among the Greeks the *α* is uſed as a privative, and among the Latins, *in*. The Engliſh, French, &c. borrow both the Greek and Latin privatives.

PRIVATIVE QUANTITY, or NEGATIVE QUANTITY, in algebra, denotes a quantity leſs than nothing, in oppoſition to affirmative or poſitive; and is expreſſed by the ſign (—) minus, prefixed thereto.

PRIVILEGE, in law, ſome peculiar benefit granted to certain perſons or places, contrary to the uſual courſe of the law. Privileges are ſaid to be perſonal or real. Perſonal privileges are ſuch as are extended to peers, ambaſſadors, members of parliament, and of the convocation, and their menial ſervants, &c.

PRIVY, in law, denotes one who is partaker, or has an intereſt in an affair.

PRIZE, or PRISE, in maritime affairs, a veſſel taken at ſea from the enemies of a ſtate, or from pirates; and that either by a man of war, a privateer, &c. having a commiſſion for that purpoſe.

PROBABILITY is nothing but the appearance of the agreement or diſagreement of two ideas by the intervention of proofs whoſe connection is not conſtant and immutable, or is not perceived to be ſo; but is, or appears for the moſt part to be ſo, and is enough to induce the mind to judge the propoſition to be true or falſe, rather than the contrary.

Of probability there are degrees from the neighbourhood of certainty and demonſtration, quite down to improbability and unlikeneſs, even to the confines of impoſſibility; and alſo degrees of aſſent, from certain knowledge, and, what is next to it, full aſſurance and confidence, quite down to conjecture, doubt, diſtruſt, and diſbelief.

That propoſition then is probable for which there are arguments or proofs to make it paſs or be received for true. Probability being then to ſupply the defect of our knowledge, is always converſant about a thing whereof we have no certainty, but only ſome inducements to receive it for true. The grounds of it are, in ſhort, theſe two following:

Firſt, the conformity of any thing with our own knowledge, experience, or obſervation.

Secondly, the teſtimony of others vouching their obſervation and experience. In the teſtimony of others is to be conſidered, 1. the number; 2. the integrity; 3. the ſkill of the witneſſes; 4. the deſign of the author, if it be a teſtimony cited out of a book; 5. the conſiſtency of the parts and circumſtances of the relation; 6. contrary teſtimonies. The mind, before it rationally aſſents or diſſents to any probable propoſition, ought to examine all the grounds of probability, and ſee how they make more or leſs for or againſt it; and upon a due balancing the whole, reject or receive it, with a more or leſs firm aſſent, according to the preponderancy of the greater grounds of probability on one ſide or the other.

PROBABILITY, in poetry, the appearance of truth in the fable or action of a poem.

PROBATE of a will or teſtament, in law, is the exhibiting and proving of laſt wills and teſtaments before the eccleſiaſtical judge delegated by the biſhop who is ordinary at the place where the party died.

PROBATION, in the univerſities, the examination and trial of a ſtudent who is about to take his degrees.

PROBATION, in a monaſtic ſenſe, ſignifies the year of novitiate which a religious muſt paſs in a convent, to prove his virtue and vocation, and whether he can bear the ſeverities of the rule.

PROBATIONER, in the church of Scotland, a ſtudent in divinity, who bringing a certificate from a profeſſor in an univerſity of his good morals, and his having performed his exerciſes to approbation, is admitted to undergo ſeveral trials.

PROBATUM EST, *it is proved*, a term frequently ſubjoined to a receipt for the cure of ſome diſeaſe.

PROBE, a ſurgeon's inſtrument for examining the circumſtances of wounds, ulcers, and other cavities, ſearching for ſtones in the bladder, &c.

PROBLEM, in logic, a propoſition that neither appears abſolutely true or falſe; and conſequently may be aſſerted either in the affirmative or negative.

PROBLEM, in geometry, a propoſition, wherein ſome operation, or conſtruction is required; as to divide a line, or angle, erect or let fall perpendiculars, &c.

PROBLEM, in algebra, a queſtion or propoſition which requires ſome unknown truth to be inveſtigated, and the truth of the diſcovery demonſtrated. So that a problem is to find a theorem.

Kepler's PROBLEM, in aſtronomy, is the determining a planet's place from the time; ſo called from Kepler, who firſt propoſed it. It was this, to find the poſition of a right line, which, paſſing through one of the foci of an ellipſis, ſhall cut off an area deſcribed by its motion, which ſhall be in any given proportion to the whole area of the ellipſis. See *Anomaly*.

PROBLEMATICAL RESOLUTION, in algebra, a method of ſolving difficult queſtions by certain rules, called canons.

PROBOSCIS, in natural hiſtory, the trunk or ſnout of an elephant, and ſome other animals and inſects.

PROCEDURE, or PROCEEDING, in law, the courſe of the ſeveral acts, inſtructions, &c. of a proceſs or law-ſuit.

It is either civil or criminal: civil procedure relates to the eſtate alone; criminal or extraordinary procedure, where the perſon is proſecuted.

PROCEED, among merchants, whatever ariſes from any thing.

PROCESS, in law, denotes the proceedings in any cauſe real or perſonal, civil or criminal, from the original writ to the end thereof.

PROCESS, in chemiſtry, the whole courſe of an experiment or ſeries of operations, tending to produce ſomething new.

PROCESS, in anatomy, denotes any protuberance or eminence in a bone.

PROCLAMATION, a public notice

given of any thing of which the king thinks proper to advertiſe his ſubjects.

PROCONSUL, a Roman magiſtrate, ſent to govern a province with conſular authority.

PROCREATION, the begetting and bringing forth children.

PROCTOR, a perſon commiſſioned to manage another perſon's cauſe in any court of the civil or eccleſiaſtical law.

PROCTORS, in an univerſity, two officers choſen from among the ſtudents, to ſee good order and exerciſes daily performed.

PROCURATOR, one who has a charge committed to him to act for another.

PROCYON, in aſtronomy, a fixed ſtar of the ſecond magnitude in the conſtellation called Canis Minor.

PRODUCING, in geometry, ſignifies the drawing out a line farther, till it has any aſſigned length.

PRODUCT, in arithmetic and geometry, the factum of two or more numbers, or lines, &c. into one another: thus $5+4=20$, the product required.

PROFESSOR, in the univerſities, a perſon who teaches or reads public lectures in ſome art or ſcience from a chair for the purpoſe.

PROFILE, in architecture, the draught of a building, fortification, &c. wherein are expreſſed the ſeveral heights, widths and thickneſſes, ſuch as they would appear were the building cut down perpendicularly from the roof to the foundation. It is alſo called ſection, of orthographical ſection, and by Vitruvius, ſciagraphy. This is the ſame as elevation, in oppoſition to a plan, which is called ichnography.

PROFILE alſo denotes the out-line of a figure, building, member of architecture, &c. Hence profiling ſometimes denotes deſigning or deſcribing the member with a rule, compaſs, &c.

PROFILE, in ſculpture and painting, denotes a head, portrait, &c. when repreſented ſidewiſe, or in a ſide-view. On almoſt all medals, faces are repreſented in profile.

PROGNOSTIC, among phyſicians, ſignifies a judgment concerning the event of a diſeaſe, as whether it ſhall end in life or death, be ſhort or long, mild or malignant, &c.

PROGRESSION, in general, a regular advancing, or going forward, in the ſame courſe and manner.

PROGRESSION, in the mathematics, is either arithmetical or geometrical.

PROHIBITED GOODS in commerce, the ſame with contraband goods.

PROHIBITION, in law, a writ that iſſues out of the chancery, King's Bench, or Common Pleas, to prohibit ſome other court, either ſpiritual or ſecular, to proceed in a cauſe there depending, upon a ſuggeſtion that the cauſe does not belong to the court.

PROJECTILE, or *Project*, in mechanics, any heavy body put into motion by an external force impreſſed thereon, and diſmiſſed from the agent and left to purſue its courſe.

PROJECTION, in mechanics, the act of giving a projectile its motion. If the direction of the force, whereby the projectile is put in motion, be perpendicular to the horizon, the projection is ſaid to be perpendicular; if parallel to the apparent horizon, a horizontal projection: if it make an oblique angle, the projection is oblique.

PROJECTION *of the Sphere*, in plano, a repreſentation of the ſeveral points of the ſurface of the ſphere, and the circles deſcribed thereon, or any aſſigned parts thereof, ſuch as they appear to the eye ſituate at a given diſtance upon a tranſparent plane placed between the eye and the ſphere.

The projection of the ſphere is either orthographic, ſtereographic, or gnomonic.

Orthographic PROJECTION *of the Sphere*, is that wherein the circles of the ſphere are drawn on a plane, the eye being placed at an infinite diſtance, vertically to one of the hemiſpheres.

Stereographic PROJECTION *of the Sphere*, that on which our maps are commonly made, and depends on this principle, that if the plane of any meridian be ſuppoſed the plane of the projection, then an eye, placed in one pole of that meridian, will project all the circles in the oppoſite hemiſphere into circular arches on the ſaid plane.

Gnomonic PROJECTION *of the Sphere*, is the projection of the ſeveral circles of the ſphere, on a plane which touches the ſurface of the ſphere, the eye being placed in the center. See *Dialing*.

PROJECTURE, in architecture, the out-jetting, prominency, or emboſſing, which the mouldings and other members have beyond the naked wall, column, &c. and is always in proportion to its height. The word is always applied to galleries, balconies, &c. which jet out beyond the face of the wall.

PROLAPSUS, in ſurgery, a prolapſion, or falling out of any part of the body from its natural ſituation: thus we ſay, *prolapſus inteſtini*, a prolapſion of the inteſtine, &c.

PROLAPSUS Ani is ſuch a prolapſion of the inteſtinum rectum, that it is frequently inverted or prolapſed to ſuch a degree both in adults and infants, as to appear near a handbreadth hanging out of its natural ſituation. Heiſter thinks, that the cauſe of this diſorder may be a great weakneſs or relaxation in the rectum, which frequently happens to croſs and clamorous children, or from a teneſmus, violent pains of the piles, a dyſentery, a ſtone, or ulcer in the bladder, a difficult expulſion of the birth, or the fæces, &c. The diſorder is not difficult to cure when recent and the patient not weak; but in the contrary circumſtances, to effect a perfect cure is next to impoſſible If a gangrene or cancer ſhould infect the rectum, as in ſuch caſes it may, the abovementioned author adviſes the application of diſcutient and emollient remedies, and f they prove unſucceſsful, an extirpaion of the morbid part. The reduction of the inteſtine, which ſhould be effected as ſoon as poſſible, is done and retained in the ſame manner as is directed n returning and retaining the prolapſed nteſtines in wounds of the abdomen. See *Abdomen*.

PROLAPSUS Oculi, a diſtemperature of the eye, in which it is ſo violently inflamed and ſwelled, that it cannot be contained in its orbit, but prorudes itſelf out of its natural ſeat. The auſes of this diſorder are various, proceeding ſometimes from a violent inflammation, or a redundancy of humours in the eye, from an obſtruction of the reductory veſſels, and ſometimes from a chirrhus, cancer, or ſome external violence. When the diſorder is recent, and ccaſioned by humours, they may be enerally diſperſed, according to Heiſter, y bleeding, purging, and veſicatories, with internal attenuants and diluents, and xternal diſcutient fomentations. But if the caſe is too obſtinate to yield to remedies, recourſe muſt be had to the hirurgical operation of the paracenteſis, s in other dropſical caſes.

PROLAPSUS Uteri is when the terus falls down and appears out of the agina: whereas when it only deſcends into the vagina, it is termed a deſcent, r bearing down of the womb. The pparent and moſt general cauſe of a prolapſus uteri is from too great a relaxation and weakneſs of its ligatures, and of the vagina, and is obſerved moſt frequently to follow a difficult labour, or other violent ſtraining, though it may ſometimes happen even to maids and young girls: as to the other ſpecies of this diſorder called the deſcent of the womb, wherein the prolapſed uterus is inverted like a bag, ſo that its internal ſurface appears outermoſt, which at the ſame time lies concealed in the vagina, it is never obſerved but when the uterus is forced down together with the ſecundines, or after a difficult labour; and if it is not ſpeedily reduced, the caſe ſoon becomes paſt cure, and kills the patient.

PROLAPSUS Vaginæ, or a bearing down of the vagina, is often confounded with the prolapſus uteri, inſomuch that they are often called by the ſame name; not being eaſily diſtinguiſhable from each other. Heiſter takes a prolapſus of the vagina to happen when that body appears either wholly or in part without the labia pudendi; and a total prolapſion ſhews itſelf without the relaxed labia, like a fleſhy ring, red or bloody, and ſwelled more or leſs, according to particular circumſtances. If the prolapſed parts are inflamed, diſcutient fomentations and cataplaſms are to be applied externally, and bleeding and the other internal medicines directed under the article *Inflammation*.

PROLAPSUS Uvulæ, a diſorder of the uvula, which is ſometimes ſo much enlarged and elongated as even to reach the larinx and pharinx, and obſtruct the actions both of reſpiration and deglutition. It proceeds from a recent inflammation, as may be judged from the pain, heat, and redneſs of the circumjacent parts, the patient may be relieved with cooling gargles, and injections of wine and water, or a decoction of proper herbs with a little alum; but at the ſame time proper coolers muſt be uſed internally, with bleeding, purges, and clyſters, to prevent the inflammation from ſpreading through the fauces, and exciting a quinſy. When this diſorder continues, notwithſtanding the uſe of remedies, it will be neceſſary, depreſſing the tongue with a ſpatula, to clip off the redundant part of the uvula with a pair of ſciſſars; after which the blood being permitted to run a little time, it may be reſtrained by a gargle of warm wine, vinegar, or if it ſtill continues, apply a little alum or a cautery, till the hæmorrhage ceaſes.

PROLATE, in geometry, an epithet applied to a ſpheroid produced by the revolution of a ſemi-ellipſis about its larger diameter.

PROLEGOMENA, in philology, certain preparatory obſervations or diſcourſes prefixed to a book, &c. containing ſomething neceſſary for the reader to be appriſed of to enable him the better to underſtand the book, or to enter deeper into the ſcience, &c.

PROLEPSIS, a figure in rhetoric, by which we anticipate or prevent what might be objected by the adverſary; thus, *it may be objected*, &c.

PROLOCUTOR *of the Convocation*, the ſpeaker or chairman of that aſſembly.

PROLOGUE, in dramatic poetry, a diſcourſe addreſſed to the audience before the drama or play begins. The original intention was to advertiſe the audience of the ſubject of the piece, and to prepare them to enter more eaſily into the action, and ſometimes to make an apology for the poet. The laſt article ſeems entirely to have taken poſſeſſion of the prologue in the Britiſh drama. The French have left off the uſe of prologues: thoſe few they uſe have nothing in them of the genuine prologue, as bearing no relation to the ſubject, but being mere flouriſhes or harangues in praiſe of the king, &c.

PROMETHEUS, in the ancient aſtronomy, the name of the conſtellation now called Hercules. See *Hercules*.

PROMISE, in law, is when upon any valuable conſideration one binds himſelf by word of mouth to another to perform a thing agreed on. It is held upon ſuch a promiſe that action will lie for breach, which will not if the promiſe be without conſideration, that being a naked bargain, from which no action can ariſe.

PROMONTORY, in geography a high point of land or rock projecting out into the ſea; the extremity of which towards the ſea, is called a cape or headland.

PROMPTER, in the drama, an officer whoſe buſineſs it is to watch attentively the actors ſpeaking on the ſtage, in order to ſuggeſt and put them forward, when at a ſtand, to correct them when amiſs, &c in their parts.

PROMULGATED, or PROMULGED, ſomething publiſhed or proclaimed, and generally applied to a law to denote the publiſhing or proclaiming it to the people.

PRONATORS, in anatomy, two muſcles of the radius, which ſerve to turn the palm of the hand downwards, and are diſtinguiſhed by the names of rotundus and quadratus.

PRONG-HOE, in huſbandry, the name of an inſtrument uſed to hoe or break the ground near and among the roots of plants.

PRONOUN, in grammar, a declinable part of ſpeech, which being put inſtead of a noun, points out ſome perſon or thing.

Pronouns are divided into the ſix following claſſes, viz. demonſtrative pronouns; relative pronouns; poſſeſſive pronouns; gentile pronouns, or ſuch as denote a perſon's country, as *noſtras*, *veſtras*, and *cujas*; interrogative pronouns, and reciprocal pronouns. See *Demonſtrative*, *Relative*, &c.

PRONUNCIATION, *Pronunciatio*, in grammar, the manner of articulating or ſounding the words of a language.

To give a juſt idea of the pronunciation of a language, it ſeems neceſſary to fix as nearly as poſſible all the ſeveral ſounds employed in the pronunciation of that language.

PRONUNCIATION is alſo uſed for the fifth and laſt part of rhetoric, which conſiſts in varying and regulating the voice agreeably to the matter and words, ſo as moſt effectually to perſuade and touch the hearers. It is much the ſame with what is otherwiſe called emphaſis.

PROOF, in arithmetic, an operation whereby the truth and juſtneſs of a calculation is examined and aſcertained. The proper proof is always by the contrary rule: thus ſubtraction is the proof of addition, and multiplication of diviſion; and *vice verſa*.

PROOF, in law, &c. denotes the mediums or arguments uſed to evince the truth of any thing.

PROOF is alſo uſed in a ſynonymous ſenſe with ſtandard: thus we call that proof ſpirit, which is of the ſtandard ſtrength, or half alcohol half phlegm.

PROPAGATION, the act of multiplying the kind, or of producing the like in the natural way of generation.

PROPER, *Proprium*, ſomething naturally and eſſentially belonging to any thing.

PROPER, in grammar, is applied to nouns, or names which are diſtinguiſhed into proper and appellative.

PROPERTY, in a general ſenſe, that which conſtitutes or denominates a thing proper: or it is a particular virtue or quality which nature has beſtowed on ſome things excluſive of all others. Thus colour is a property of light; extenſion, figure, diviſibility, and impenetrability, are properties of body, &c.

Property, in law, is defined to be the higheſt right a perſon has or can have, to any thing; it being uſed to denote that right which one has to lands or tenements, goods, or chattels, in no reſpect depending upon another's courteſy.

PROPHECY, a prediction made by divine inſpiration.

Mr. Whiſton condemns all allegorical explanations of the prophecies of the Old Teſtament cited in the New, as weak, enthuſiaſtic, &c. and adds, that if a double ſenſe of the prophecies be allowed and there be no other method of ſhewing their completion than by applying them ſecondarily and typically to our Lord, after having been in their firſt and primary intention long ago fulfilled in the times of the Old Teſtament, we loſe all the real advantages of the ancient prophecies as to the proof of chriſtianity. He therefore ſets up a new ſcheme in oppoſition thereto: he owns that taking the preſent text of the Old Teſtament for genuine, it is impoſſible to expound the apoſtles citations of the propheſies of the Old Teſtament on any other than the allegorical foundation; and therefore to ſolve the difficulty, he is forced to have recourſe to a ſuppoſition contrary to the ſenſe of all Chriſtian writers before him, viz that the text of the Old Teſtament has been greatly corrupted ſince the apoſtolical age by the Jews.

Perſons pretending to prophecies are puniſhable at common law, by ſtatute; likewiſe if any perſon publiſh ſuch prophecies with an intent to raiſe ſedition, they ſhall forfeit 10 l. for the firſt offence, and ſuffer a year's impriſonment; and for the ſecond, incur the forfeiture of all their goods, &c.

PROPHET, in general, one who foretells future events, but is particularly applied to ſuch inſpired perſons among the Jews as were commiſſioned by God to declare his will and purpoſes to that people. Among the canonical books of the Old Teſtament, we have the writings of ſixteen prophets, four of which are denominated the greater prophets, viz. Iſaiah, Jeremiah, Ezekiel, and Daniel, ſo called from the length or extent of their writings, which exceed thoſe of the others, viz. Hoſea, Joel, Amos, Obadiah, Jonas, Micah, Nahum, Habakkuk, Haggai, Zachariah, and Malachi, who are called the leſſer prophets from the ſhortneſs of their writings. The Jews do not place Daniel among the prophets, becauſe they ſay he lived the life of a courtier rather than that of a prophet.

PROPITIATION, in theology, a ſacrifice offered to God to aſſwage his wrath, and render him propitious. Among the Jews there were both ordinary and public ſacrifices, as holocauſts, &c. offered by way of thankſgiving: and extraordinary ones, offered by particular perſons guilty of any crime, by way of propitiation. The Romiſh church believe the maſs to be a ſacrifice of propitiation for the living and the dead. The reformed churches allow of no propitiation but that one offered by Jeſus Chriſt on the croſs. Propitiation was alſo a feaſt among the Jews, celebrated on the tenth of the month Tiſri, in commemoration of the pardon proclaimed to their forefathers by Moſes on the part of God, who thereby remitted the puniſhment due to the crime of their worſhipping the golden calf.

PROPITIATORY, or MERCY-SEAT, among the Jews, was the cover or lid of the ark of the covenant. See *Ark*.

The cherubims ſpread their wings over the propitiatory.

PROPORTION, in arithmetic, the identity or ſimilitude of two ratios, magnitudes or quantities, A, B, C, D, are ſaid to be proportional, the firſt A to the ſecond B, and the third C to the fourth D, when the ratio of the firſt A to the ſecond B is the ſame thing with the ratio of the third C to the fourth D; or which is the ſame thing, when the firſt A as often contains or is contained in the ſecond B, as the third C contains or is contained in the fourth D. Thus the numbers, 4, 8, 12, 24, are proportional numbers, becauſe the firſt number 4 is as often contained in the ſecond number 8, as the third number 12 is contained in the fourth number 24, that is, twice; and which is therefore called the common ratio.

Whence it follows, that magnitudes, which to one and the ſame magnitude have the ſame ratio, are equal the one to the other, and, if a magnitude have the ſame ratio to other magnitudes, thoſe magnitudes are equal one to the other. Which is the ninth prop. of Euc. v.

Now, in the comparing the quantities A B C D together, if the ratio of the ſecond B to the third C is found to be the ſame with the ratio of the firſt A to the ſecond B, and of the third C to the fourth D; then theſe four quantities A, B, C, D, are ſaid to be in geometric proportion continued, or ſometimes in geometric progreſſion, and are therefore called progreſſional numbers; and ſo for any greater number, viz. 5, 6, 7, &c. Thus, the numbers $\frac{1}{4}$, $\frac{1}{2}$, 1, 2, 4, 8, 16, 32, &c. or, 81, 27, 9, 3, 1, $\frac{1}{3}$, $\frac{3}{4}$, &c. are in geometric proportion continued, becauſe there is the ſame conſtant ratio between them, and are therefore called progreſſional numbers, or geometrical ſeries; the firſt of which is called an increaſing ſeries, becauſe it is generated by a continual multiplication; the ſecond is called a decreaſing ſeries, inaſmuch as it is generated by continual diviſion.

When 3, 4, or more quantities, A, B, C, D, &c. are continually proportional, the firſt A ſhall have a duplicate ratio to the third C, of that it has to the ſecond B, as being compounded of the ratios of the firſt to the ſecond, of the ſecond to the third, and of the third to the fourth; ſo always in order one more, as the proportion ſhall be expreſſed.

In comparing the quantities A B C D together, if the ratio of the ſecond quantity B to the third C be greater or leſſer than the ratio of the firſt A to the ſecond B, or of the third C to the fourth D; then thoſe quantities A B C D, are ſaid to be in geometric proportion diſcontinued; thus in the numbers 4, 8, 24, 48, becauſe the ratio of the ſecond 8 to the third 24 is triple greater than the ratio of the firſt 4 to the ſecond 8, or of the third 24 to the fourth 48, which is but double, therefore, thoſe 4 numbers are in geometric proportion diſcontinued, and the ſign for diſcontinued proportion is : : and, where the ſign is placed, it ſhews that there the proportion is interrupted, and begins a-new, and accordingly, where four quantities are thus expreſſed A : B : : C : D, they are thus to be read, as A is to B, that is, in proportion to B, to is C to D.

From theſe premiſſes duly conſidered, all the various properties of proportional numbers or quantities will be eaſily inveſtigated.

Inverſe or *Reciprocal* PROPORTION, is when, of four numbers, or quantities, the third bears the ſame proportion to the firſt, as the ſecond does to the fourth. See *Rule of three Inverſe.*

Harmonical PROPORTION is when four numbers, or quantities are taken in a certain order, the firſt having the ſame ratio to the fourth, as the difference of the firſt and ſecond has to the difference of the third and fourth. Example 9, 12, 16, 24 : are harmonically proportional, viz. 9 : 24 : : 12—9 : 24—16 (or 9 : 24 : : 3 : 8) but if the firſt is to the fourth, as the difference of the firſt and ſecond it is called contra-harmonical proportion; as 2, 8, 4, 6, where 2 : 6 : : 6—4 : 8—2 (i. e. 2 : 6 : : 2 : 6.)

This kind of proportion may exiſt alſo between three numbers, one of which is compared as a middle term to both the extremes; that is, if the firſt has the ſame ratio to the third, as the difference of the firſt and ſecond to the difference of the ſecond and third; or as the difference of the ſecond and third to that of the firſt and ſecond; for ſuch coincide with the former, by taking the middle term twice. Example 3, 4, 6, are harmonical, becauſe 3 : 6 : : 4—3 : 6—4 (viz. 3 : 6 : : 1 : 2) and theſe contra-harmonical 3, 5, 6; becauſe 3 : 6 : : 6—5 : 5—3 (viz. 3 : 6 : : 1 : 2.) And if in a ſeries of numbers every 3 terms are harmonical, it is a harmonical ſeries or progreſſion (i. e. a ſeries of conjunct or continued harmonials.) Example 10, 12, 15, 20, 30, 60, wherein every 3 terms next together are harmonical. And when of 4 terms the 2 middle are different, that may be called disjunct harmonical proportion.

But this conſiderable difference is to be obſerved between this kind of proportion and the former, that in a ſeries of continued harmonials every four terms adjacent will not alſo be harmonical, as they are geometrical or arithmetical in theſe kinds of progreſſion. Example. Though 10, 12, 15, are harmonical, and alſo 12, 15, 20; yet 10, 12, 15, 20, are not ſo.

If we take the word proportion ſtrictly, according to the general definition, for an equality of ſimilar relations between two numbers, then it muſt be owned there is no new ſpecies of proportion here; for there is no new kind of relation in any two terms, but only a mixed compariſon between two numbers and their differences from others; and the proportion conſtituted is really a geometrical one, or an equality of ratios; not indeed of the given numbers, but of the ratio of the extremes compared to the ratio of the differences of theſe extremes with the middle terms: but though this is not ſtrictly a proportion among the given numbers immediately together, yet it is certainly a complex and new relation (diſtant from the immediate arithmetical or geometrical relation between the ſeveral couplets or numbers themſelves) to which, alſo, the name of proportion is applied.

This denomination of harmonical ariſes from muſic; becauſe the relations or proportions of ſounds that make harmony, are found to be of the kind here defined, of which a more particular explanation may be ſeen under the article *Concord*.

PROPORTION is alſo uſed for the relation between unequal things of the ſame kind, whereby their ſeveral parts correſpond to each other with an equal augmentation or diminution.

Thus, in reducing a figure into little, or enlarging it, care is taken to obſerve an equal diminution, or enlargement, through all its parts; ſo that if one line, e. gr. be contracted by one-third of its length, all the reſt ſhall be contracted in the ſame proportion.

The making reductions of this kind is the great uſe of the proportional compaſſes.

PROPOSITION, in logic, part of an argument wherein ſome quality, either negative or poſitive, is attributed to a ſubject; or according to Chauvinus, it is a complete conſiſtent ſentence, indicating or expreſſing ſomething either true or falſe, without ambiguity, as, God is juſt.

PROPOSITION, in mathematics, is either ſome truth advanced and ſhewn to be ſuch by demonſtration, or ſome operation propoſed, and its ſolution ſhewn. If the propoſition be deduced from ſeveral theoretical definitions compared together, it is called a theorem; if from a praxis, or ſeries of operations, it is called a problem.

PROPRIETOR, or PROPRIETARY, he who has the property of any thing.

PROPRIETY, in grammar, is where the direct and immediate ſignification of a word agrees to the thing it is applied to; in which ſenſe it is uſed in oppoſition to figurative, or remote ſignification.

PRO RATA, in commerce, a term ſometimes uſed by merchants for, in proportion; as, "Each perſon muſt reap the profit or ſuſtain the loſs pro rata to his intereſt, that is, in proportion to his ſtock."

PROROGATION, the act of prolonging, adjourning, or putting off to another time. The difference between a prorogation and an adjournment of parliament is, that by prorogation the ſeſſion is ended, and ſuch bills as paſſed in either houſe, or both houſes, and had not the royal aſſent, muſt, at the next aſſembly, begin again; becauſe that every ſeſſion of parliament is in law a ſeveral parliament: whereas, if the parliament be only adjourned, there is no new ſeſſion, and conſequently all things continue in the ſame ſtate they were in before the adjournment. See *Parliament*.

PROSCRIPTION, a publication made in the name of the chief or leader of a party, whereby he promiſes a reward to any one who ſhall bring him the head of one of his enemies.

PROSE, the natural language of mankind, looſe and unconfined, by poetical meaſures, rhymes, &c. in which ſenſe it ſtands oppoſed to verſe.

PROSECUTOR, in law, he that purſues a cauſe in another's name.

PROSELYTE, a new convert to ſome religion or religious ſect.

* PROSERPINE, in fabulous hiſtory, the daughter of Jupiter and Ceres. She was carried off by Pluto as ſhe was gathering flowers with her companions. Ceres, diſconſolate for the loſs of her daughter, after having long ſought for her, heard where ſhe was, and intreated Jupiter to let her return from hell. The requeſt Jupiter granted, on condition that ſhe had taſted nothing in Pluto's dominions. Ceres therefore went after her; but when her daughter was preparing to return, Aſcalaphus gave information that he had ſeen Proſerpine eat part of a pomegranate, which ſhe had gathered in Pluto's garden, on which ſhe was ſentenced to continue in Tartarus, in the quality of Pluto's ſpouſe, and the queen of thoſe gloomy regions: but to mitigate the grief of Ceres for her diſappointment, Jupiter conſented that her daughter ſhould only paſs ſix months together in hell with her huſband, and the other ſix on earth with her mother. Some mythologiſts imagine that the latter part of the fable alludes to the corn, which muſt remain all the winter hid in the earth, in order to ſprout forth in the ſpring, and produce the harveſt.

PROSODY, that part of grammar which treats of the quantities and accents of ſyllables, and the manner of making verſes.

PROSOPOPOEIA, a figure in rhetoric, whereby we raiſe qualities, or things inanimate, into perſons. This figure is divided into two parts; 1. when good and bad qualities, accidents, and things inanimate, are introduced as living and rational beings.

The ſecond part of this figure is when we give a voice to inanimate things, and make rocks, woods, rivers, buildings, &c. expreſs the paſſions of rational creatures.

PROSTATÆ, in anatomy, a gland generally ſuppoſed to be two ſeparate bodies, though in reality but one, of a roundiſh, or ſomewhat heart-faſhioned ſhape, ſituated juſt before the neck of the bladder, and ſurrounding the beginning of the urethra.

PROSTHESIS, in grammar, the prefixing ſome letter or ſyllable at the beginning of a word, as in *gnatus* for *natus*, &c.

PROTECTION, the ſhelter, defence, authority, and aid employed by any one in behalf of another.

PROTECTOR, one who undertakes to ſhelter and defend the weak, helpleſs, and diſtreſſed.

PROTECTOR is alſo ſometimes uſed for a regent of a kingdom, made choice of to govern it during the minority of a prince.

PROTEST, in law, is a call of witneſs, or an open affirmation that a perſon does, either not at all, or but conditionally, yield his conſent to any act, or to the proceeding of any judge in a court in which his juriſdiction is doubtful; or to anſwer upon his oath farther than he is bound by law.

PROTEST, in commerce, a ſummons wrote by a notary public to a merchant, banker, or the like, to accept or diſcharge a bill of exchange drawn on him, after his having refuſed either to accept or pay it.

PROTESTANT, a name firſt given in Germany to thoſe who adhered to the doctrine of Luther; becauſe in 1529, they proteſted againſt a decree of the emperor Charles V. and the diet of Spires; declaring that they appealed to a general council. The name has alſo been given to thoſe of the ſentiments of Calvin, and is now become a common denomination for all thoſe of the reformed churches.

PROTHONOTARY, a term which properly ſignifies firſt notary, and which was anciently the title of the principal notaries of the emperors of Conſtantinople.

PROTHONOTARY with us is uſed for an officer in the court of King's Bench and Common Pleas; the former of which courts has one, and the latter three. The Prothonotary of the King's Bench records all civil actions ſued in that court, as the clerk of the crown-office does all criminal caſes.

PROTHYRUM, in architecture, a porch at the outer door of a houſe.

PROTO-TYPE is the original or model after which a thing was formed, but chiefly uſed for the patterns of things to be engraved, caſt, &c.

PROTRACTION, in ſurveying the ſame with plotting.

PROTRACTOR, in ſurgery, a kind of forceps, ſo called from extracting foreign bodies out of wounds.

PROTRACTOR is alſo the name of an inſtrument uſed for protracting or laying down on paper the angles of a field, or other figure.

PROTUBERANCE, in anatomy, any eminence, whether natural or preter-natural, that projects or advances out beyond the reſt.

PROVEND, or PROVENDER, originally ſignified a kind of veſſel containing the meaſure of corn daily given to a horſe, or other beaſt of labour, for his ſubſiſtence: but it is now uſed for all the food given to cattle.

PROVERB, according to Camden, a conciſe, witty, and wiſe ſpeech, grounded upon experience, and for the moſt part containing ſome uſeful inſtruction.

Book of PROVERBS, a canonical book of the Old Teſtament, containing a part of the proverbs of Solomon, the ſon of David, king of Iſrael. The firſt twenty-four chapters are acknowledged to be the genuine work of that prince; the next five chapters are a collection of ſeveral of his proverbs, made by order of king Hezekiah; and the two laſt ſeem to have been added, though belonging to different and unknown authors, Agur the ſon of Jakeh, and king Lemuel. In this excellent book are contained rules for the conduct of all conditions of life; for kings, courtiers, maſters, ſervants, fathers, mothers, children, &c.

PROVIDENCE, the conduct and direction of the ſeveral parts of the univerſe, by a ſuperior intelligent being. The notion of a providence is founded on this ſuppoſition, that the Creator has not ſo fixed and aſcertained the laws of nature, nor ſo connected the chain of ſecond cauſes, as to leave the world to itſelf; but that he ſtill preſerves the reins in his own hands, and occaſionally interpoſes, alters, enforces, reſtrains, and ſuſpends thoſe laws by a particular interpoſition. Some, with the Epicureans, deny a providence, as imagining it inconſiſtent with the happineſs of the divine nature. Others again deny the exiſtence of a providence, on account of the ſeemingly unjuſt diſtribution of good and evil. Simplicius argues thus for a providence: If God do not look to the affairs of the world, it is either becauſe he cannot or will not; but the firſt is abſurd, ſince to govern cannot be difficult, when to create was eaſy; and the latter is both abſurd and blaſphemous.

The ſentiments of Cicero are likewiſe very preciſe and pertinent to this purpoſe: he thinks it impoſſible for one who duly conſiders the innumerable objects of the univerſe, and their invariable order and beauty, to entertain the leaſt doubt, but that there is ſome efficient cauſe who preſides over and directs the mighty fabric! Nay he lays it down as a fundamental principle of all ſocieties, that there is a divine providence, which directs all events, obſerves the actions of mankind, whether good or bad, diſcerns the very intention of the heart, and will certainly make a difference between good men and the wicked.

PROVINCE, in geography, a diviſion of a kingdom or ſtate, compriſing ſeveral cities, towns, &c. all under the ſame government, and uſually diſtinguiſhed by the extent either of the civil or eccleſiaſtical juriſdiction.

PROVISO, in law, a condition inſerted in a deed, upon the obſervance of which the validity of the deed depends.

PROVOCATIVE, in phyſic, a medicine which is ſuppoſed to ſtrengthen nature, and incites to venery.

PROVOST, an officer, whereof there are divers kinds, civil, military, &c.

PROVOST *of a city or town*, is the chief municipal magiſtrate in ſeveral trading cities, particularly Edinburgh, Paris, &c. being much the ſame with mayor in other places.

PROVOST *Marſhal of an Army*, is an officer appointed to ſeize and ſecure deſerters, and all other criminals.

PROXY, one who officiates as a deputy in the room of another.

PRUNES, in commerce, plums dried in the ſun-ſhine, or in an oven.

PRUNIFEROUS TREES, thoſe with pretty large and fleſhy fruit, with a nucleus in the middle, and called by botaniſts a drupe.

PRUNING, in gardening and agriculture, is the lopping off the ſuperfluous branches of trees, in order to make them bear better fruit, grow higher, or appear more regular.

There is not any part of gardening, which is of more general uſe than that of pruning; and yet it is very rare to ſee fruit-trees ſkilfully managed: and almoſt every gardener will pretend to be a maſter of this buſineſs, though there are but few who rightly underſtand it; nor is it to be learned by rote, but requires a ſtrict obſervation of the different manners of growth of the ſeveral ſorts of fruit-trees; ſome requiring to be managed one way, and others muſt be treated in a quite different method, which is only to be known from carefully obſerving how each kind is naturally diſpoſed to produce its fruit: for ſome ſorts produce their fruit on the ſame year's wood, as vines; others produce their fruits, for the moſt part, upon the former year's wood, as peaches, nectarines, &c. and others upon curſons or ſpurs, which are produced upon wood of three, four, or five, to fifteen, or twenty years old, as pears, plumbs, cherries, &c. therefore, in order to the right management of fruit-trees, there ſhould always be proviſion made to have a ſufficient quantity of bearing wood in every part of the trees, and, at the ſame time, there ſhould not be a ſuperfluity of uſeleſs branches, which would exhauſt the ſtrength of the trees, and cauſe them to decay in a few years.

The reaſons which have been laid down for pruning of fruit-trees, are as follow: firſt, to preſerve trees longer in a vigorous bearing ſtate; the ſecond is, to render the trees more beautiful to the eye; and thirdly, to cauſe the fruit to be larger, and better taſted.

1. It preſerves a tree longer in an healthy bearing ſtate; for by pruning off all ſuperfluous branches, ſo that there are no more left upon the tree than are neceſſary, or than the roots can nouriſh properly, the root is not exhauſted in ſupplying uſeleſs branches, which muſt afterwards be cut out; whereby much of the ſap will be uſeleſsly expended.

2. By ſkilful pruning of a tree, it is rendered much more pleaſing to the eye: but here I would not be underſtood to be an advocate for a ſort of pruning which I have ſeen too much practiſed of late; viz. the drawing a regular line againſt the wall, according to the ſhape or figure they would reduce the tree to, and cutting all the branches, ſtrong or weak, exactly to the chalked line; the abſurdity of which practice will ſoon appear to every one

who will be at the pains of obſerving the difference of thoſe branches ſhooting the ſucceeding ſpring. All therefore that I mean by rendering a tree beautiful, is, that the branches are all pruned according to their ſeveral ſtrengths, and are nailed at equal diſtances in proportion to the different ſizes of their leaves and fruit; and that no part of the wall, ſo far as the trees are advanced, be left unfurniſhed with bearing wood. A tree well managed, though it does not repreſent any regular figure, yet will appear very beautiful to the ſight, when it is thus dreſſed, and nailed to the wall.

3. It is of great advantage to the fruit; for the cutting away all uſeleſs branches, and ſhortening all the bearing ſhoots, according to the ſtrength of the tree, will render the tree more capable to nouriſh thoſe which are left remaining, ſo that the fruit will be much larger, and better taſted. And this is the advantage which thoſe trees againſt walls or eſpaliers have to ſuch as are ſtandards, and are permitted to grow as they are naturally inclined; for it is not their being trained either to a wall or eſpalier which renders their fruit ſo much better than ſtandards, but becauſe they have a leſs quantity of branches and fruit for their roots to nouriſh; and, conſequently, their fruit will be larger, and better taſted.

There are many perſons who ſuppoſe, that if their fruit-trees are but kept up to the wall or eſpalier, during the ſummer-ſeaſon, ſo as not to hang in very great diſorder, and in winter, to get a gardener to prune them, it is ſufficient: but this is a very great miſtake; for the greateſt care ought to be employed about them in the ſpring, when the trees are in vigorous growth; which is the only proper ſeaſon to procure a quantity of good wood in the different parts of the tree, and to diſplace all uſeleſs branches, as ſoon as they are produced, whereby the vigour of the tree will be intirely diſtributed to ſuch branches only, as are deſigned to remain; which will render them ſtrong, and more capable to produce good fruit; whereas, if all the branches are permitted to remain, which are produced, ſome of the more vigorous will attract the greateſt ſhare of the ſap from the tree, whereby they will be too luxuriant for producing fruit, and the greateſt part of the other ſhoots will be ſtarved, and rendered ſo weak, as not to be able to produce any thing elſe but bloſſoms and leaves, as hath been before mentioned; ſo that it is impoſſible for a perſon, let him be ever ſo well ſkilled in fruit-trees, to reduce them into any tolerable order by winter pruning only, if they are wholly neglected in the ſpring

There are others, who do not intirely neglect their trees during the ſummer ſeaſon, as thoſe before mentioned; but yet do little more good to them by what they call ſummer pruning; for theſe perſons neglect their trees at the proper ſeaſon, which is in April and May, when their ſhoots are produced, and only about Midſummer go over them, nailing in all their branches, except ſuch as are produced fore-right from the wall, which they cut out; and at the ſame time often ſhorten moſt of the other branches; all which is entirely wrong practice; for thoſe branches which are intended for bearing the ſucceeding year, ſhould not be ſhortened during the time of their growth, which will cauſe them to produce two lateral ſhoots from the eyes, below the place where they were ſtopped, which ſhoots will draw much of the ſtrength from the buds of the firſt ſhoot, whereby they are often flat, and do not produce their bloſſoms; and if thoſe two lateral ſhoots are not intirely cut away at the winter pruning, they will prove injurious to the tree, as the ſhoots which theſe produce will be what the French call water-ſhoots: and in ſuffering thoſe luxuriant ſhoots to remain upon the tree until Midſummer, before they are diſplaced, they will exhauſt a great ſhare of the nouriſhment from the other branches, as was before obſerved; and by ſhading the fruit all the ſpring-ſeaſon, when they are cut away, and the other branches faſtened to the wall, the fruit, by being ſo ſuddenly expoſed, will receive a very great check, which will cauſe their ſkins to grow tough, and thereby render them leſs delicate. This is to be chiefly underſtood of ſtone-fruit and grapes; but pears and apples, being much hardier, ſuffer not ſo much, though it is a great diſadvantage to thoſe alſo, to be thus managed.

It muſt alſo be remarked, that peaches, nectarines, apricots, cherries, and plums, are always in the greateſt vigour, when they are the leaſt maimed by the knife; for, where theſe trees have large amputations, they are very ſubject to gum and decay; ſo that it is certainly the moſt prudent method carefully to rub off all uſeleſs buds when they are firſt produced, and pinch others, where new ſhoots are wanted to ſupply the vacancies of the wall; by which management trees may be ſo ordered, as to want but little of the knife in winter pruning, which is the ſureſt way to preſerve theſe trees healthfull, and is performed with leſs trouble than the common method.

The management of pears and apples is much the ſame with theſe trees in ſummer; but in winter they muſt be very differently pruned: for, as peaches and nectarines do, for the moſt part produce their fruit upon the former year's wood, and therefore muſt have their branches ſhortened according to their ſtrength, in order to produce new ſhoots for the ſucceeding year; ſo pears, apples, plums, and cherries, on the contrary, producing their fruit upon curſons or ſpurs, which come out of the wood of five, ſix or ſeven years old, ſhould not to be ſhortened, becauſe hereby thoſe buds which were naturally diſpoſed to form theſe curſons, or ſpurs, would produce wood-branches, whereby the trees would be filled with wood, but never produce much fruit; and as it often happens, that the bloſſom-buds are firſt produced at the extremity of the laſt year's ſhoot, ſo, by ſhortening the branches, the bloſſoms are cut away, which ſhould always be carefully avoided.

There are ſeveral authors who have written on the ſubject of pruning in ſuch a prolix manner, that it is impoſſible for a learner to underſtand their meaning; theſe have deſcribed the ſeveral ſorts of branches, which are produced on fruit-trees, as wood branches, fruit-branches, irregular branches, falſe branches, and luxuriant branches; all which they aſſert, every perſon who pretends to pruning, ſhould diſtinguiſh well: whereas there is nothing more in all this but a parcel of words to amuſe the reader, without any real meaning; for all theſe are comprehended under the deſcription already given of luxuriant or uſeleſs branches, and ſuch as are termed uſeful fruit-bearing-branches: and, where due care is taken in the ſpring of the year, to diſplace theſe uſeleſs branches, as was before directed, there will be no ſuch thing as irregular, falſe, or luxuriant branches, at the winter pruning; therefore it is to no purpoſe to amuſe people with a cant of words, which, when fully underſtood, ſignify juſt nothing at all.

The following hints will be of great uſe in pruning ſtandard-trees.

Firſt, you ſhould never ſhorten the branches of theſe trees, unleſs it be where they are very luxuriant, and grow irregular on one ſide of the tree, attracting a great part of the ſap of the tree, whereby the other parts are unfurniſhed with branches, or are rendered very weak; in which caſe the branch ſhould be ſhortened down as low as is neceſſary, in order to obtain more branches, to fill up the hollow of the tree: but this is only to be underſtood of pears and apples, which will produce ſhoots from wood of three, four, or more years old; whereas moſt ſorts of ſtone fruit will gum and decay, after ſuch amputations.

But from hence I would not have it underſtood, that I would direct the reducing of theſe trees into an exact ſpherical figure, ſince there is nothing more deteſtable than to ſee a tree, which ſhould be permitted to grow as it is naturally diſpoſed, with its branches produced at proportionable diſtances, according to the ſize of the fruit, by endeavouring to make it ſo exactly regular at its head, ſo crouded with ſmall weak branches as to prevent the air from paſſing between them, which will render it incapable to produce fruit. All that I intend by this ſtopping of luxuriant branches, is only when one or two ſuch happen on a young tree, where they entirely draw all the ſap from their weaker branches, and ſtarve them: and then it is proper to uſe this method, which ſhould be done in time, before they have exhauſted the roots too much.

Whenever this happens to ſtone-fruit, which ſuffer much more by cutting than the former ſorts, it ſhould be remedied by ſtopping or pinching thoſe fruits in the ſpring, before they have obtained too much vigour; which will cauſe them to puſh out ſide branches, whereby the ſap will be diverted from aſcending too faſt to the leading branch, as has been directed for wall-trees; but this muſt be done with caution, as before.

You muſt alſo cut out all dead or decaying branches, which cauſe their head to look very ragged; eſpecially at a time when the leaves are upon the tree; theſe being deſtitute of them, have but a deſpicable appearance; beſides, theſe will attract noxious particles from the air, which are injurious to the trees; therefore the ſooner they are cut out the better: in doing of this you ſhould obſerve to cut them cloſe down to the place where they were produced, otherwiſe that part of the branch left will decay, and prove equally hurtful to the tree; for it ſeldom happens, when a branch begins to decay, that it does not die quite down to the place where it was produced; and, if permitted to remain long uncut, does often infect ſome of the other parts of the tree. If the branches are large which you cut off, it will be very proper, after having ſmoothed the cut part exactly even with a knife, chiſſel, or hatchet, to put on a plaſter of grafting clay, which will prevent the wet from ſoaking into the tree at the wounded part.

All ſuch branches as run acroſs each other ſhould alſo be cut out; for theſe not only occaſion a confuſion in the head of the tree, but by lying over each other, rub off their bark by their motion, and very often occaſion them to canker, to the great injury of the tree; and on old trees, eſpecially apples, there are often young vigorous ſhoots from the old branches near the trunk, which grow upright into the head of the trees: theſe therefore ſhould carefully be cut out every year, leſt, by being permitted to grow, they fill the tree too full of wood; which ſhould always be guarded againſt, ſince it is impoſſible for ſuch trees to produce ſo much, or ſo good fruit, as thoſe trees whoſe branches grow at a farther diſtance; whereby the ſun and air freely paſs between them, in every part of the tree. *Miller's Gard. Dict.*

* PRUSSIA, a kingdom of Europe, is ſeated near the Baltic Sea, and extends 250 miles along the coaſt. It is bounded on the S. by Poland; on the E. by Lithuania; on the N. by the Baltic Sea; and on the W. by Brandenburg, Pomerania, and Caſſubia. It is divided into Regal Pruſſia, Poliſh Pruſſia, and Ducal Pruſſia, the laſt of which was erected into a kingdom by the emperor Leopold, in 1706, in favour of Frederick III. margrave of Brandenburg. It is a very fertile country, and produces more flax, hemp, and corn than the inhabitants can conſume. The tame cattle are very numerous, game very plenty, and the ſea and lakes yield abundance of fiſh. There are in the foreſts wild aſſes, and an animal of the ox kind called a urus. One of the moſt remarkable productions of this country is yellow amber, which is fiſhed for on the ſea-coaſts, particularly near the circle of Samland. There are here two great lakes, and two large rivers, the Viſtula and Pregel. The inhabitants are laborious, robuſt, able to undergo fatigue, and excellent ſoldiers. There are a great number of mechanics; but the principal buſineſs of the inhabitants is huſbandry and feeding of cattle. Poliſh Pruſſia comprehends four provinces, namely, the palatinate of Pomerania, whoſe capital is Dantzic; the palatinate of Culm, whoſe principal place is Thorn; the palatinate of Marienburg, whoſe principal town is of the ſame name; and the territory of Wermia, whoſe chief place is Braunſburg. Regal Pruſſia is divided into three circles, Samland, Natangen, and Hockerland, and each of theſe contains three ſmall provinces. The capital town of Samland, is Coningſburg; of Sclavonia, Memel; and of Nardia, Labigau. This country is under the direction of a governor appointed by the king of Pruſſia, aſſiſted by four great officers. The religion is generally proteſtant, after the confeſſion of Augſburg; but there are ſome Calviniſts and Roman Catholics. There are two orders of knighthood; the firſt of which is the Black Eagle, inſtituted by Frederick 1ſt in 1701, the day before his coronation. The chain of this order is compoſed of cyphers of the king's name mixed with eagles. The mark of the order is a ſtar with eight points, enamelled with azure; and in the middle are the letters F. R. At the four corners of the eſcutcheon are four ſpread eagles. The ribband is orange, which is a ſymbol of the houſe of Orange. The knights have an embroidered ſtar on their breaſts, in the center of which is a black eagle, holding a laurel crown in his claw. Their number is never to exceed thirty. The other order is that of Merit, founded by his preſent majeſty Frederic the third, in 1740. The mark is a golden croſs with eight points, enamelled with azure; and on the uppermoſt point is the letter F. crowned: on the three lowermoſt points the motto is "For Merit." This ſtar is fixed to a black ribband, which they put about their necks, and it hangs down to their breaſts.

PRUSSIAN-BLUE, among painters, &c. is prepared by precipitating a ſolution of green vitriol and alum with a lixivium drawn from fixed alkaline ſalt that has been calcined with animal coals. Commonly about three parts of alkali and two of dried ox-blood are calcined ſo long as any flame appears, then thrown into boiling water, and the ſtrained decoction poured into a hot mixture of ſolutions of four parts of alum, and one or leſs of vitriol. The liquor becomes inſtantly thick or curdly, and looks at firſt of a greyiſh colour, which changes to a brown, and in a little time to a bluiſh green. The matter being well ſtirred together, and mixed with a quantity of hard ſpring water, a green precipitate ſubſides; ſpirit of ſalt poured upon the edulcorated powder, diſſolves a part, and leaves the reſt blue.

Mr. Geoffry is the beſt who has given a plauſible theory of this proceſs, or any rational means for improving it. He obſerves, that the Pruſſian blue is no other than the iron of the vitriol, revived by the inflammable matter of the alkaline lixivium, and perhaps brightened by an admixture of the white earth of the alum; the green colour proceeds from a part of the yellow ferrugineous calx or ochre unrevived, mixing with the blue; and that this ſpirit of ſalt diſſolves this ochre more readily than the blue part, though it will diſſolve that alſo by long ſtanding, or if uſed in too large quantity. From theſe principles he was led to increaſe the quantity of inflammable matter, that there might be enough to revive the whole of the ferrugineous ochre, and produce a blue colour at once without the uſe of the acid ſpirit: in this he perfectly ſucceeded, and found at the ſame time, that the colour might be rendered of any degree of deepneſs or lightneſs at pleaſure. If the alkali is calcined with twice its weight of dried blood, and the lixivium obtained from it poured into a ſolution of one part of vitriol to ſix of alum, the liquor acquires a very pale blue colour, and depoſits as pale a precipitate: on adding more and more of a freſh ſolution of vitriol, the colour becomes deeper and deeper, almoſt to a blackneſs. He imagines with great probability, that the blue pigment thus prepared will prove more durable in the air, mingle more perfectly with other colours, and be leſs apt to injure the luſtre of ſuch things as are mixed or applied in its neighbourhood, than that made in the common manner; the tarniſh and other inconveniences to which common Pruſſian blue is ſubject, ſeeming to proceed from the acid ſpirit, which cannot be totally ſeparated by any ablution. He takes notice of an amuſing phœnomenon, which happens upon mixture. When the liquors are well ſtirred together, and the circular motion as ſoon as poſſible ſtopped: ſome drops of ſolution of vitriol, depurated by long ſettling, let fall on different parts of the ſurface, divide, ſpread, form curious repreſentations of flowers, trees, ſhrubs, flying inſects, &c. in great regularity and perfection: theſe continue ten or twelve minutes; and on ſtirring the liquor again, and dropping in ſome more of the ſolution of vitriol, are ſucceeded by a new picture.

Mr. Macquer has ingeniouſly applied the preparation of this pigment to the dying of wool and ſilk; and found means of fixing the blue fecula in their pores. By dipping cloth firſt in a diluted ſolution of vitriol and alum, then in the ley diluted, and afterwards in water acidulated with ſpirit of vitriol, it acquires a light blue colour; which becomes deeper and deeper on repeating the dippings alternately in the ſame order as before; and adding to the liquors each time a little more of the reſpective ſaline matters. This blue dye, he ſays, in beauty and luſtre exceeds that of indigo and woad as far as ſcarlet does the madder red; and penetrates the whole ſubſtance of fulleſt cloth, without weakening it. The colour is durable in the air, and ſtands boiling with alum water, but is diſcharged by ſoap, and without certain precautions, liable to be ſpecky and unequal. See the *Memoirs of the French Academy for the year* 1749.

PSALM, a divine ſong or hymn; but chiefly appropriated to the hundred and fifty Pſalms of David, a canonical book of the Old Teſtament. Moſt of the Pſalms have a particular title, ſignifying either the name of the author, the perſon who was to ſet it to muſic or ſing it, the inſtrument that was to be uſed, or the ſubject and occaſion of it. Some have imagined, that David was the ſole author of the Book of Pſalms; but the title of many of them prove the contrary, as Pſalm xix. which appears to have been written by Moſes. Many of the Pſalms are inſcribed with the names Korah, Jeduthun, &c. from the perſons who were to ſing them. Pſalm lxxii. and cxxvii. are under the name of Solomon, the former being compoſed by David for the uſe of his ſon, and the latter being probably compoſed by Solomon himſelf. The authority and canonicalneſs of the book of Pſalms has always been acknowledged, both by Jews and Chriſtians. However, nothing can be a greater argument of its obſcurity, than the great number of commentaries upon them.

PSALMODY, the art or act of ſinging pſalms.

PSALTER, the ſame with the book of Pſalms.

PSALTERY, a muſical inſtrument,

much in uſe among the ancient Hebrews, who call it nebel.

PSEUDO, from ψευδος, a Greek term uſed in the compoſition of many words, to denote falſe or ſpurious; as the pſeudo-acacia, or baſtard acacia; pſeudo-fumaria, or baſtard-fumitory; pſeuda-ruta, or baſtard rue, &c.

PSOAS, in anatomy, the name of two muſcles, diſtinguiſhed by the epithets magnus and parvus. The pſoas magnus is one of the flexor muſcles of the thigh, and ariſes from the firſt, ſecond, third, and fourth vertebræ of the loins. The pſoas parvus is one of the flexor muſcles of the loins, which ariſes by a ſlender tendon from the os pubis, where it is joined to the ilium; and is inſerted into the ſide of the upper vertebræ of the loins; it is often wanting, and when found, its office is to aſſiſt the quadratas in elevating the oſſa innominata, eſpecially when we lie down.

* PSYCHE, in fabulous hiſtory, was a favourite of Cupid, whoſe marriage with her has been celebrated by the poets. Pſyche in Greek ſignifies ſoul She was repreſented with the wings of a butterfly fixed to her ſhoulders; for the butterfly was eſteemed the emblem of the ſoul, and therefore when the Greeks painted a dead body, they repreſented a butterfly which ſeemed to have eſcaped from its mouth into the air.

PSYCHOLOGY, ψυχολεγια, that branch of anthropology which treats of the ſoul, its faculties, paſſions, &c.

PSYCHOMANCY, ψυχομαντεια. a kind of a devination, performed by raiſing the ſouls of perſons deceaſed.

PSYCROMETER, an inſtrument for meaſuring the degrees of coldneſs or heat in the air, and more uſually called thermometer. See *Thermometer*.

PTERYGOIDE, ſomething reſembling a wing; from a reſemblance to which, four apophyſes or proceſſes of the os ſphenoides have been called pterygoide.

PTERYGOIDÆUS, in anatomy, the name of two muſcles of the lower jaw, one internal and the other external. The internal pterygoidæus muſcle has its origin in the cavity of the pterygoide proceſs, and its termination is in the interior and lower ſuperficies of the angles of the jaw. The external pterygoidæus ariſes from the exterior lamina of the ſame proceſs, and terminates a little above the inſertion of the other.

There are alſo ſeveral pairs of muſcles of the pharynx and uvula, as the pterygo-pharyngæus, and pterygo-ſtaphylinus, which have got their names from being connected by the ſame proceſs. The pterygo-ſtaphylinus ariſes from the upper part of the ſaid proceſs, and deſcending between its two lamellæ, turns back its tendon over the thin apophyſis of the interior lamella, as over a pulley, to the interior part of the membrane of the palate, into which it is inſerted, and ſerves to draw the uvula downwards and forwards.

PTOLEMAIC, or PTOLEMÆAN *Syſtem of Aſtronomy*, is that invented by Claudius Ptolemæus, a celebrated aſtronomer and mathematician of Peluſium, in Egypt, who lived in the beginning of the ſecond century of the Chriſtian æra. This hypotheſis ſuppoſes the earth immoveably fixed in the center, not of the world only, but alſo of the univerſe; and that the ſun, the moon, the planets, and ſtars all move about it, from eaſt to weſt, once in twenty-four hours, in the order following, viz. the moon next to the earth, then Mercury, Venus, the Sun, Mars, Jupiter, Saturn, the fixed ſtars, the firſt and ſecond cryſtalline heavens, and above all the fiction of their primum mobile.

This ſyſtem or hypotheſis was firſt invented, and adhered to, chiefly becauſe it ſeemed to correſpond with the ſenſible appearances of the celeſtial motions. They took it for granted, that the motions which theſe bodies appeared to have, were ſuch as they truly and really performed: and not dreaming of any motion in the earth, nor being apprized of the diſtinction of abſolute and relative or apparent motion, they could not make a proper judgment of ſuch matters; but were under a neceſſity of being miſled by their ſenſes, for want of the aſſiſtances we now enjoy.

It is eaſy to obſerve, they had no notion of any other ſyſtem but our own, nor of any other world but the earth on which we live. They imagined that all the fixed ſtars were contained in one concave ſphere, and that the primum mobile was circumſcribed by the empyreal heaven, of a cubic form, which they ſuppoſed to be heaven, or the bliſsful abode of departed ſouls.

It would ſcarce have been worth while to have ſaid ſo much about ſo abſurd an hypotheſis, as this is now well known to be, were it not that there are ſtill numerous retainers thereto, who endeavour

Plate XLIV.

Facing Pulley.

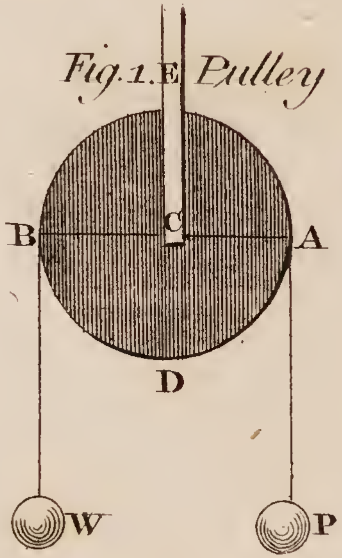
Fig. 1. Pulley

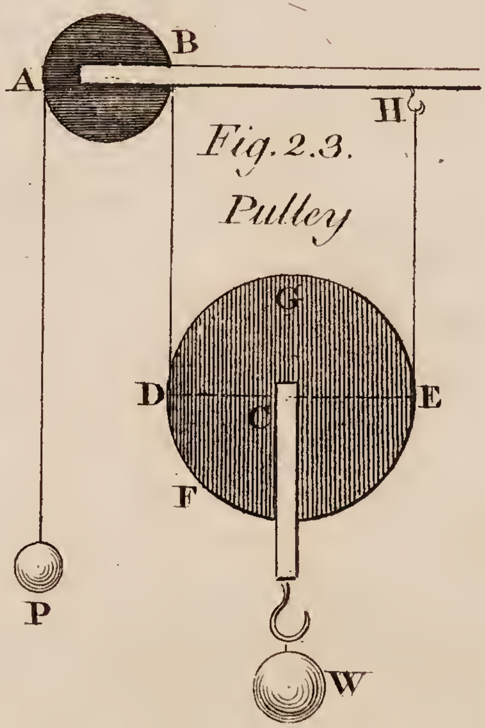
Fig. 2. 3. Pulley

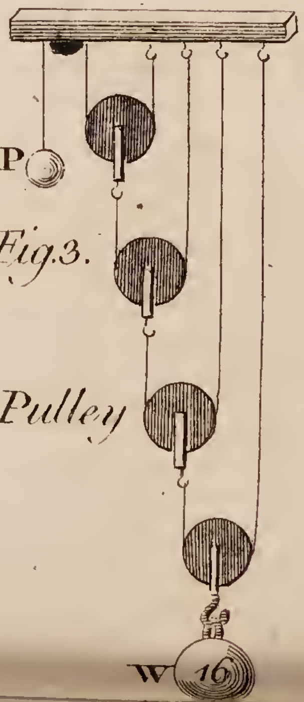
Fig. 3. Pulley

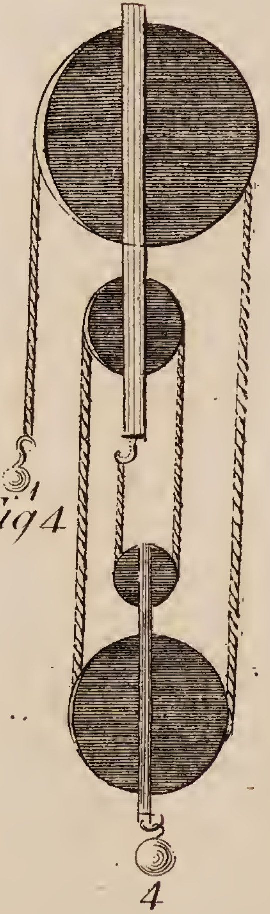
Fig. 4

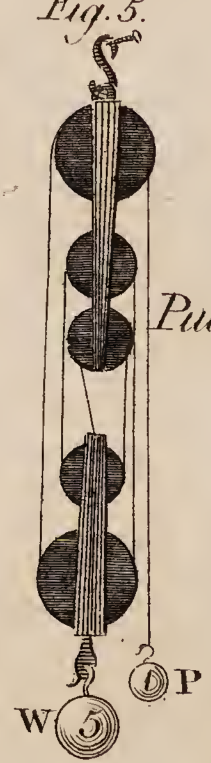
Fig. 5. Pulley

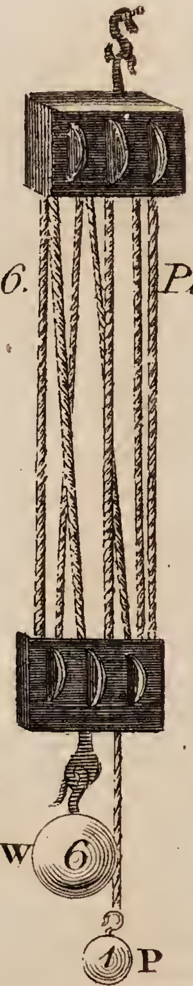
Fig. 6. Pulley

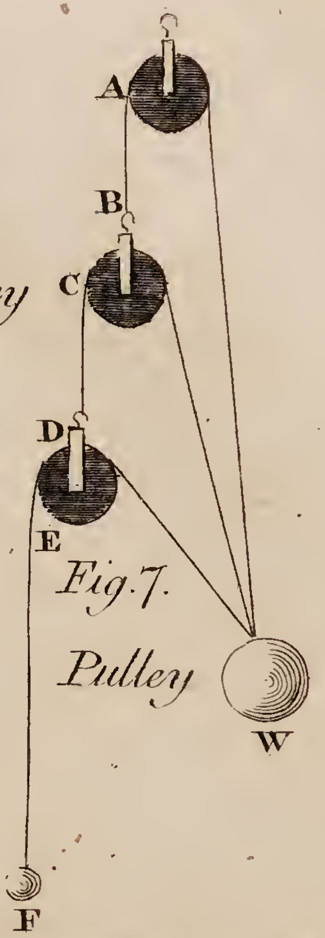
Fig. 7. Pulley

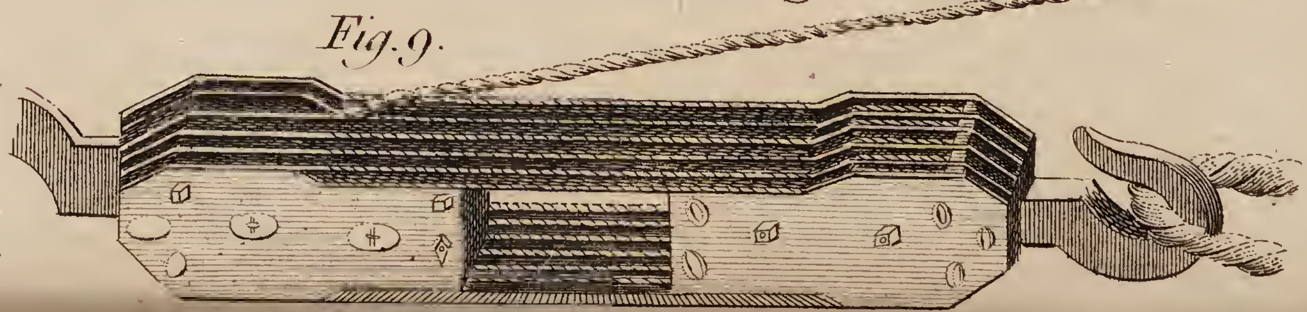
Fig. 9.

very zealouſly to defend the ſame, and that for two reaſons principally, viz. becauſe the earth is apparently fixed in the center of the world, and the ſun and ſtars ſeem to move about it daily; and alſo becauſe the Scripture aſſerts the ſtability of the earth, the motion of the ſun, &c. But that the diurnal motion of the earth occaſions all theſe appearances, we have abundantly proved under the articles *Diurnal* and *Copernician*.

PTYALISM, in medicine, a ſalivation, or frequent and copious diſcharge of ſaliva.

PUBERTY, among civilians, &c. the age wherein a perſon is capable of procreation, or begetting children. Boys arrive at puberty at fourteen years of age, and girls at twelve; eighteen years of age is accounted full puberty.

PUBES, among anatomiſts, &c. denotes the middle part of the hypograſtic region of the abdomen, lying between the two inguina or groins.

PUBLICAN, among the Romans, one who farmed the taxes and public revenues.

PUBLICATION, the act of making a thing known to the world; the ſame with promulgation.

PUCERON, in zoology, a genus of wingleſs inſects with fewer than ſix pair of legs. The body is ſhort and roundiſh; the tail is crooked and forked; the legs are three pairs, and ſerve only for walking; and the eyes are two, but each compoſed of eight leſſer ones.

The pucerons are extremely numerous, living on the young branches of trees and plants; and often found in ſuch cluſters as wholly to cover them: they are uſually denominated from the trees and places where they are found; there being ſcarce a vegetable, either in the fields or gardens, that has not a peculiar ſpecies of puceron to feed on its juices.

PUDENDA, the parts of generation in both ſexes. See *Generation*.

* PUDICITIA, in pagan worſhip, one of the virtues to which the Romans erected temples and altars. Pudicitia, or Chaſtity, was honoured at Rome under two names. In the temple of Pudicitia Patricia none were admitted but ladies of noble birth; but Virginia, the daughter of Aulus, marrying a Plebeian, ſo exaſperated the ladies, that ſhe was excluded from their aſſemblies, when Virginia, calling together the Plebeian matrons, dedicated a temple to Pudicitia Plebeia. In both theſe temples no matron was permitted to ſacrifice, who had not an unblemiſhed character, and was but once married. Pudicitia is repreſented, on medals, in the figure of a woman veiled and pointing to her face, to ſignify that ſhe had no reaſon to bluſh.

PUERILITY, in diſcourſe, is defined by Longinus to be a thought, which, by being too far-fetched, becomes flat and inſipid.

Puerility, he adds, is the common fault of thoſe who affect to ſay nothing but what is brilliant and extraordinary.

PUGIL, in phyſic, &c. ſuch a quantity of flowers, ſeeds, or the like, as may be taken up between the thumb and two fore-fingers.

It is eſteemed to be the eighth part of the manipule or handful.

PUISNE, or PUNY, in law, one younger born.

PULLEY, in mechanics one of the five mechanical powers, called by the Latins *trochlea*, and by the ſeamen a tackle.

If A D B E (plate XLIV. *fig.* 1.) be a pulley upon which hang the weights P W; then ſince the neareſt diſtances of the ſtrings A P and B W, from the center of motion C, are A C and B C, the pulley will be reduced to the lever or ballance A B, with reſpect to its power; and from thence it appears that, ſince $AC = BC$, we ſhall always have $P = W$, for an equilibrium; and, therefore, no advantage in raiſing a weight, &c. can be had from a ſingle pulley.

In a combination of two pullies, A B and DFEG, (*fig.* 2.) the power is doubled; for the pulley D F E G is reducible to the lever E D, which muſt be conſidered as fixed in the point E to the immoveable ſtring H E; and the power acting at D is equal to P, and the weight W is ſuſtained from the center C of the pulley; but $P : W :: CE : DE$; therefore, ſince $DE = 2\,CE$, it is $W = 2P$, or $P = \frac{1}{2}W$.

The force of the pullies may alſo be eaſily ſhewn by comparing the velocities of the power and weight; for it is evident, if the weight W (*fig.* 3.) be raiſed one inch, each ſtring H E, D B, will be ſhortened one inch, and conſequently the ſtring A P will be lengthened two inches; and ſo P will paſs through twice the ſpace that W does, in the ſame time: conſequently the tackle of pullies, in the form of *fig.* 4. will increaſe the power five times; and that of *fig.* 5. and 6 will increaſe it ſix times.

In the diſpoſition of pullies, according to *fig*. 8. it is plain, ſince each pulley has a fixed rope, it muſt be conſidered as a lever of the ſecond ſort, and ſo will double the power of the fore-going pulley; and ſo four pullies will increaſe the power ſixteen times.

Tho' the laſt-mentioned form be of the greateſt force from the ſame number of pulleys; yet, if we conſider the ſimplicity, force, and conveniency of the tackle of pullies altogether, none is ſuperior to that of the form of *fig*. 7. where the uppermoſt pulley is fixed, and each has a rope annexed to the weight; its power therefore is thus eſtimated: when the weight W is raiſed one inch, the rope A B will be lengthened as much, and ſo the pully C will deſcend one inch, by which means the rope C D will be lengthened two inches, and one by the riſing of the weight W.; wherefore the pulley E will deſcend three inches; and thus the rope E P will be lengthened ſix inches by that means (viz. three on each ſide); alſo, the riſing of the weight will cauſe it to lengthen one inch more, ſo that the power P goes through ſeven inches, while the weight W riſes one: therefore P : W : : 1 : 7. And thus you proceed for any other number.

The following curious and uſeful combination of pullies is given by the ingenious Mr. Smeaton in the XLVIIth Vol. of the *Philoſophical Tranſactions*.

The preſent method of arranging pullies in their blocks may be reduced to two. The firſt conſiſts in placing them one by the ſide of another, upon the ſame pin; the other in placing them directly under one another, upon ſeperate pins. But in each of theſe methods an inconvenience ariſes, if above three pullies are framed in one block. For, according to the firſt method, if above ſix pullies are placed by the ſide of one another, as the laſt line, by which the draught is made, or, as it is uſually called, the fall of the tackle, muſt neceſſarily be on the outſide pulley or ſhieve, the difference of their friction will give it ſo great a tendency to pull the block away, that as much will be loſt by the rubbing of the ſhieves againſt the block, on account of its obliquity, as will be got by increaſing the number of lines.

The ſecond method is free from this objection: but as the length of the two blocks, taken together, muſt be equal to the ſum of the diameters of the ſix pullies, beſides the ſpaces between for the ropes, and the neceſſary appendages of the framing, were there more than three pullies in each block, they would run out into ſuch an inconvenient length, as to deduct very conſiderably from the height, to which the weight might otherwiſe have been raiſed; ſo that upon thoſe accounts, no very great purchaſe can be made by the common tackles of pullies alone.

In order therefore to increaſe its power, ſometimes a ſecond tackle is fixed upon the fall of the firſt; but here it is obvious, that, whatever be the power of the ſecond tackle, the height to which the weight might otherwiſe have been raiſed by the firſt, will be leſs in the ſame proportion as the purchaſe is increaſed by the ſecond.

Again, very frequently the fall of the firſt tackle is applied to an axis in peritrochio, which increaſes the purchaſe very commodiouſly without the inconveniencies laſt mentioned; but then the machine is rendered cumberſome, and, conſequently, leſs fit for a moveable apparatus.

All thoſe impediments I have avoided, by combining the two methods, above deſcribed, in one. The pullies are here placed in each block in two tier; ſeveral being upon the ſame pin as in the firſt method, and every one having another under it, as in the ſecond; as alſo that, when the tackle is in uſe, the two tier, that are the remoteſt from one another, are ſo much larger in diameter than thoſe that are neareſt, as to allow the lines of the former to go over the lines of the latter without rubbing.

From this conſtruction ariſes a new method of reeving the line upon the ſhieves: for here, let the number of ſhieves be what it will, the fall of the tackle will always be upon the middle ſheive, or on that next the middle, according as the number of pullies on each pin is odd or even.

To do this the line is fixed to ſome convenient part of the upper block, and brought round the middle ſhieve of the larger tier of the under block; from thence round one of the ſame ſort, next the center one of the upper block; and ſo on till the line comes to the outſide ſhieve, where the laſt line of the larger tier falls upon the firſt ſhieve of the ſmaller, and being reeved round thoſe, till it comes at the oppoſite ſide, the line from the laſt ſhieve of the ſmaller tier again riſes to the firſt of the larger, where it is conducted round, till it ends on the middle ſhieve of the upper block on the larger tier, as will appear more plain, by inſpection of Plate XLIV. *fig.* 9.

In this method all the lines are clear of one another, and the blocks are kept parallel. The model which I had the honour to ſhew the Society, and from which I made the draught, is a compoſition of twenty ſhieves, five on each pin. With this model, which may be eaſily carried in the pocket, I have raiſed 600 weight But with a tackle of this ſort, properly executed in large, one man will eaſily raiſe a ton, and a greater number in proportion.

I have tried ſeveral numbers of ſhieves as far as 36; but 20 ſeems to be the largeſt number, that will anſwer well in practice.

A very commodious tackle of twelve might be executed in wood, in the ſame manner that common blocks are made.

PULMONARY *Veſſels*, in anatomy, arteries and veins, which carry the blood from the heart to the lungs, and back again from the lungs to the heart.

PULP, in pharmacy, the fleſhy and ſucculent part of fruits, extracted by infuſion or boiling, and paſſed through a ſieve.

Some phyſicians uſe the term pulp for the fatteſt, fulleſt, and moſt ſolid part of the fleſh of animals.

PULPIT, an elevated place in a church, from which ſermons are delivered; the French give the ſame name to a reading-deſk.

PULSE, in the animal œconomy, denotes the beating or throbbing of the heart and arteries. See *Heart* and *Artery*.

No doctrine has been involved in more difficulties than that of pulſes; ſince, in giving a phyſiological account of them, phyſicians have eſpouſed quite oppoſite ſentiments; whilſt ſome doubt whether the pulſe is owing to the ſyſtole or diaſtole; as alſo, whether the motion of the heart, and arteries, is one and the ſame, for a moment of time. See *Syſtole* and *Diaſtole*.

The pulſes of perſons differ according to the largeneſs of the heart and veſſels, the quantity and temperies of the blood, the elaſtic force of the canals; as alſo with regard to the ſex, age, ſeaſon, air, motion, food, ſleep, watchings, and paſſions of the mind. The pulſe is larger and more quick in men than in women; in the bilious and ſanguineo-bilious, than in the phlegmatic and melancholic. Thoſe who are lean, with tenſe fibres, and larger veſſels, have a greater and a ſtronger pulſe than thoſe that are obeſe, with lax fibres and ſmall veſſels; whence they are more healthy, robuſt, and apt for labour. In children, the pulſe is quick and ſoft; in adults, greater and more violent. In the old, it is commonly great, hard, and ſlow. Labour, motion, and exerciſe of the body, encreaſe the circulation of the blood, the excretions, and particularly reſpiration; reſt renders the circulation ſlow and weak; intenſe ſpeaking increaſes the circulation, and conſequently renders the pulſe large and quick. In watching, the pulſe is more evident; in ſleep more ſlow and languid. After drinking hot things, ſuch as coffee and tea, or hot bath-waters, as well as after meals, the pulſe vibrates more quick. But nothing produces a greater change in the pulſe than affections of the mind: in terror it is unequal, ſmall and contracted; in joy, frequent and great; in anger, quick and hard; in ſadneſs, ſlow, ſmall, deep, and weak; and in intenſe ſtudy, languid and weak. With regard to the air, when after the predominancy of a weſt or ſouth wind, it becomes north or eaſt, the pulſe is ſtronger and larger; as alſo when the quickſilver riſes in the barometer. But when the atmoſphere is denſe, humid, rainy, with a long ſouth wind; as alſo where the life is ſedentary, the ſleep long, and the ſeaſon autumnal, the pulſe is languid and ſmall, and the perſpiration decreaſed. In May it is great, and ſometimes violent; in the middle of ſummer, quick but weak; in the autumn, ſlow, ſoft, and weak; in the winter, hard and great. A draſtic purge and an emetic render the pulſe hard, quick and weak, with loſs of ſtrength; chalybeates, and the bark, render it great and robuſt, and the complexion lively; volatiles, amplify and increaſe the pulſe; acids and nitrous remedies refrigerate the body, and appeaſe the pulſe; opiates and the like render it ſmall and weak, and decreaſe the elaſticity of the ſolids; whereas things abounding with a friendly ſulphur increaſe the pulſe; but poiſons render it ſmall, contracted, and hard. When the quantity of the blood is too great, bleeding raiſes the pulſe.

The ſeveral indications of the pulſe in

different diſorders, may be ſeen under the reſpective names of theſe diſeaſes.

PULSE is alſo uſed for the ſtroke with which any medium is affected by the motion of light, ſound, &c. through it.

PULSE, in botany, a term applied to all thoſe grains or ſeeds which are gathered with the hand, in contradiſtinction to corn, &c. which are reaped, or mowed: or it is the ſeeds of the leguminous kind of plants, as beans, vetches, &c. but it is by ſome uſed for artichokes, aſparagus, &c.

* PULTNEY, William, eſq; afterwards created earl of Bath, was deſcended from one of the moſt ancient families in the kingdom, was born in the year 1682. Having a plentiful fortune, he ſat early in the houſe of commons, and was a warm partizan againſt the miniſtry in the reign of queen Anne, whoſe errors he detected with a ſpirited eloquence. In 1714, George Iſt. aſcending the throne, made him ſecretary at war; and ſoon after he was raiſed to be cofferer to his majeſty's houſhold; but the intimacy which had ſubſiſted between him and Mr. Walpole, who was then as prime miniſter, was ſoon interrupted by its being ſuſpected, that Sir Robert wanted to extend the limits of prerogative, therefore an irreconcilable breach between the two miniſters enſued. Mr. Pultney oppoſed all Sir Robert's meaſures, ſo that ſome have been of opinion, that he frequently carried his oppoſition to ſuch a length, as to exert himſelf againſt him, even when the meaſures he purſued were beneficial to the public. This rendered him ſo obnoxious to the crown, that in July, 1731, George II. called for the council-book, and with his own hand ſtruck the name of William Pulteney, eſq; out of the liſt of privy counſellors; his majeſty farther ordered him to be put out of all commiſſions for the peace; the ſeveral lord lieutenants, from whom he had received deputations, were commanded to revoke them; and the lord-chancellor and ſecretaries of ſtate were directed to give the neceſſary orders for that purpoſe. This only inflamed Mr. Pulteney's reſentment, and encreaſed his popularity. He continued to attack the meaſures of the miniſter with an inflexible ſeverity, and with a degree of eloquence and ſarcaſm, that frequently worſted his antagoniſts; and though Sir Robert ſeldom loſt his temper, and generally anſwered him very calmly; it is ſaid, that he more than once obſerved, "that he dreaded his tongue more than another man's ſword." In 1738, when oppoſition ran ſo high that ſeveral members openly left the houſe, on finding that Sir Robert's party carried every motion, Mr. Pultney vindicated the extraordinary ſteps they had taken; and when a motion was made for removing Sir Robert, he warmly ſupported it. In 1741, Sir Robert found his place no longer tenable, he prudently reſigned all his employments, and was created earl of Orford. His oppoſers, among whom Mr. Pulteney was the chief, were aſſured of being provided for; Mr. Pulteney was accordingly ſworn of the privy-council, and ſoon after created earl of Bath. He had long lived in the ſummit of popular applauſe; but from the moment he accepted a title, he loſt all his favour with the people. He died without iſſue on the 8th of June 1764, and his title became extinct; but was ſucceeded in his eſtate by his brother, lieutenant-general Pulteney, who is now alſo dead.

PULVERIZATION, the art of pulverizing, or reducing a dry body into a fine powder, which is performed in friable bodies, by pounding or beating them in a mortar, &c. but to pulverize malleable ones, other methods muſt be taken. To pulverize lead, or tin, the method is this: rub a round wooden box all over the inſide with chalk; pour a little of the melted metal nimbly into the box; when, ſhutting the lid, and ſhaking the box briſkly, the metal will be reduced to powder. See the article *Granulation*.

PULVIS *Fulminans*, among chemiſts, a powder, ſo called from its ſmart and loud exploſion, when it begins to melt, after being placed upon an iron-plate over a gentle fire.

PUMICE, in natural hiſtory, a ſlag or cinder of ſome foſſil, originally bearing another form, and only reduced to this ſtate by the action of the fire, though generally ranked by authors among the native ſtones. It is a lax and ſpongy matter, frequently of an obſcure, ſtriated texture, in many parts, and always very cavernous and full of holes; it is hard and harſh to the touch, but much lighter than any other body that comes under the claſs of ſtones. It is found in maſſes of different ſizes, and of a perfectly irregular ſhape, from the bigneſs of a pigeon's egg to that of a buſhel.

PUMP, in hydraulics, a machine,

formed on the model of a ſyringe, for raiſing water.

Air Pump. See *Air Pump.*

Chain Pump, a machine chiefly uſed on board large ſhips. It conſiſts of two rollers, one fixed at the top, and the other at the bottom of the machine. Round theſe two rollers an endleſs chain, furniſhed with burs or ſmall leather buckets, is fixed; and on one ſide is a tube or barrel exactly fitted to the burs, extending from the deck or place where the water is delivered, to the lower roller in the well. Both theſe rollers are ribbed, to prevent the chain from ſlipping, and the upper one has a double winch fixed to it. When this roller is turned round, the chain is drawn through the tube or barrel, and conſequently cauſes the water to aſcend with the buckets to the top of the tube, where it is diſcharged.

PUN, or Punn, a conceit ariſing from the uſe of two words that agree in ſound, but differ in the ſenſe.

PUNCH, an inſtrument of iron or ſteel, uſed in ſeveral arts, for the piercing or ſtamping holes in plates or metals, &c. being ſo contrived as not only to perforate, but to cut out and take away the piece.

PUNCHEON, Punchin, or Punchion, a little block, or piece of ſteel, on one end whereof is ſome figure, letter, or mark, engraven either in creux or relievo, impreſſions whereof are taken on metal, or ſome other matter, by ſtriking it with a hammer on the end not engraved. There are various kinds of theſe puncheons uſed in the mechanical arts; ſuch, for inſtance, are thoſe of the goldſmiths, cutlers, pewterers, &c.

The puncheon, in coining, is a piece of iron ſteeled, whereon the engraver has cut in relievo the ſeveral figures, arms, effigy, inſcription, that are to be in the matrices, wherewith the ſpecies are to be marked. Minters diſtinguiſh three kinds of puncheons, according to the three kinds of matrices to be made; that of the effigy, that of the croſs or arms, and that of the legend, or inſcription. The firſt includes the whole portrait in relievo; the ſecond are ſmall, each only containing a piece of the croſs or arms, for inſtance, a fleur-de-lys, an harp, a coronet, &c. by the aſſemblage of all which the entire matrice is formed. The puncheons of the legend only contain each one letter, and ſerve equally for the legend on the effigy ſide and the croſs ſide. See the article *Coining.*

Puncheon is alſo uſed for ſeveral iron tools of various ſizes and figures uſed by the engravers in creux on metals. Seal-engravers particularly uſe a great number for the ſeveral pieces of arms, &c. to be engraven; and many ſtamp the whole ſeal from a ſingle puncheon.

Puncheon is alſo a common name for all thoſe iron inſtruments uſed by ſtone-cutters, ſculptors, blackſmiths, &c. for the cutting, inciding, or piercing their ſeveral matters.

Puncheon, in carpentry, is a piece of timber placed upright between two poſts, whoſe bearing is too great, ſerving, together with them, to ſuſtain ſome large weights.

Puncheon is alſo uſed for the arbor or principal part of a machine, whereon it turns vertically, as that of a crane, &c.

PUNCHEON is alſo a meaſure for liquids, containing an hogſhead and one third, or eighty-four gallons.

PUNCTUATION, in grammar, the art of pointing, or of dividing a diſcourſe into periods by points expreſſing the pauſes to be made in the reading thereof. See *Point.*

PUNCTUM SALIENS, in anatomy, the firſt rudiments of the heart in the formation of the fœtus, where a throbbing motion is perceived.

PUNCTURE, in ſurgery, any wound made by a ſharp-pointed inſtrument.

PUNISHMENT, in law, the penalty which a perſon incurs on the breach or tranſgreſſion of any law.

PUPIL, in the civil law, a boy or girl not yet arrived at the age of puberty, i. e. the boy under fourteen years, and the girl under twelve.

Pupil is alſo uſed in univerſities, &c. for a youth under the education or diſcipline of any perſon.

Pupil, in anatomy, a little aperture in the middle of the uvea and iris of the eye, through which the rays of light paſs to the cryſtalline, in order to be painted on the retina, and cauſe viſion.

* PURCELL, Henry, a juſtly celebrated maſter of muſic, began early to diſtinguiſh himſelf. As his genius was original, it wanted but little forming, and he roſe to the height of his profeſſion with more eaſe than others paſs through their rudiments. He was made organiſt to Weſtminſter abbey in the latter end of the reign of Charles II. In that of king William, he ſet ſeveral ſongs for Dryden's Amphytrion, and his King Ar-

thur, or the Britiſh Worthy, which were received with juſt applauſe; and that great poet, who thought the defects of his own compoſitions abundantly ſupplied by thoſe of Purcell, has pronounced him equal to the beſt maſters of muſic abroad. His notes in his operas were admirably adapted to his words, and ſo echoed to the ſenſe, that the ſounds alone ſeemed capable of exciting thoſe paſſions which they never failed to do in conjunction. His muſic was very different from the Italian. It was entirely Engliſh, and perfectly maſculine. His principal works have been publiſhed under the title of *Orpheus Britannicus*. He died on the 21ſt of November 1695, in the thirty-ſeventh year of his age, and was interred in Weſtminſter abbey, where a monument is erected to his memory.

PURCHASE, in law, the buying or acquiring of lands, &c. with money, by deed or agreement, and not by deſcent or right of inheritance.

PURE, ſomething free from any admixture of foreign or heterogeneous matters: thus we ſay, pure fire, &c. See *Fire*, &c.

PURE HYPERBOLA, in conics, is an hyperbola without any oval, nodes, ſpike, or conjugate point.

PURFLEW, a term in heraldry, expreſſing ermins, peans, or any of the furs, when they compoſe a bordure round a coat of arms: thus they ſay, He beareth gules a bordure, purflew, vairy: meaning that the bordure is vairy.

PURGATIVE, or PURGING MEDICINES, a medicament which evacuates the impurities of the body by ſtool, called alſo cathartics.

PURGATORY, a place in which the juſt, who depart out of this life, are ſuppoſed to expiate certain offences which do not merit eternal damnation. Broughton has endeavoured to prove, that this notion has been held by Pagans, Jews, and Mahometans, as well as by Chriſtians.

PURIFICATION, in matters of religion, a ceremony which conſiſts in cleanſing any thing from a ſuppoſed pollution or defilement.

PURIFICATION *of the Bleſſed Virgin*, a feſtival of the Chriſtian church, obſerved on the ſecond of February, in memory of the purification of Chriſt in the temple, and his mother's ſubmitting to the Jewiſh law of purification, after the birth of a male child.

PURIFICATION, in chemiſtry, the act of purifying or refining natural bodies by ſeparating the fæces and impurities from them.

PURIM, or *the Feaſt of Lots*, a ſolemn feſtival of the Jews, inſtituted in memory of the deliverance they received from Haman's wicked attempt to deſtroy them, by means of Mordecai and Eſther.

PURITAN, a name formerly given in deriſion to the diſſenters from the church of England, on account of their profeſſing to follow the pure word of God, in oppoſition to all traditions and human conſtitutions.

PURLINS, in building, thoſe pieces of timber that lie acroſs the rafters on the inſide, to keep them from ſinking in the middle of their length.

PURLUE, or PURLIEU, ſignifies all that ground near any foreſt, which being made foreſt by king Henry II. Richard I. and king John, was afterwards by perambulations and grants of Henry III. ſevered again from the ſame, and made purlieu; that is to ſay, pure and free from the laws of the foreſt.

PURLUE-MAN, or PURLIEU-MAN, a perſon who has ground within the purlieu, and is qualified to hunt within the ſame, though under certain reſtrictions.

PURPLE, a colour compoſed of a mixture of red and blue.

A beautiful tranſparent purple for painting may be made by boiling four ounces of raſped Braſil wood in a pint of ſtale beer, and half an ounce of logwood, till the liquor is heightened to the colour you deſire, which may be known by dipping a piece of paper in it. If you find it too red, add a quarter of an ounce more of logwood, which will render it ſtill deeper, and by this method you may bring it to any degree of purple, by putting in either more or leſs logwood to the former compoſition, and fixing it with alum. This will produce ſuch a clear purple as no mixture of reds and blues will produce. Madam Mariana, of Amſterdam, famous for painting in miniature, and for her excellent manner of illuminating prints, ſays, that the beſt purple that can be made, may be compoſed between the carmine and indigo; to ſtrengthen which, on the red ſide, you may add lake, between the lighter and darker part: and ſo lake, when it is uſed in the ſame way, on the foregoing purple, produces a very fine effect.

PURPLE FEVER, the ſame with miliary fever. See *Fever*.

PURPURA, in natural hiſtory, a genus of ſimple ſhells, having no hinge, formed of one continuous piece, and covered from the top to the bottom with ſpines, tubercles, and umbos: the mouth is ſmall, and approaches to a round figure: the clavicle is ſhort, but the other extremity is uſually protended to a conſiderable length.

PURPURE, POURPRE, or PURPLE, in heraldry, according to ſome, is one of the five colours of armories, compounded of gules and azure, bordering on violet, and according to others, of a great deal of red and a little black. But it was excluded by the ancient heralds as only an imperfect colour. In the coats of noblemen it is called amethyſt; and in thoſe of princes, mercury. It is repreſented in engraving, by diagonal lines drawn from the ſiniſter chief to the dexter baſe point.

PURREL, a liſt ordained by act of parliament to be made at the end of kerſeys, to prevent deceit in diminiſhing their length.

PURSIVENESS, among farriers, a diſorder in horſes, otherwiſe called broken wind, in which the horſe makes a hiſſing whiſtling ſound in his throat, and has a greater heaving in the flanks than in common colds.

PUS, in medicine, a white or yellowiſh putrid matter, formed of corrupted blood, and contained in a wound or ulcer.

PUSTULE, a pimple, or ſmall eruption on the ſkin full of pus.

PUTLOGS, or PUTLOCKS, in building, are ſhort pieces of timber about ſeven feet long, uſed in building ſcaffolds. They lie at right angles to the wall, with one of their ends reſting upon it, and the other upon the poles which lie parallel to the ſide of the wall of the building.

PUTREFACTION, a kind of ſlow corruption produced by heat and ſome moiſt fluid, particularly the air and water; which, penetrating the pores, diſſolves and ſets at liberty ſome of the more ſubtile parts, particularly the ſalts and oils, and thus looſens the compages, and changes the texture of bodies.

PUTRID, ſomething rotten or putrefied.

PUTTY, the ſame with ſpodium. See *Spodium*.

PUTTY, in its popular ſenſe, a kind of paſte compounded of whiting and linſeed oil, beaten together to the conſiſtence of a thick dough. It is uſed by glaziers for the faſtening in the ſquares of glaſs in ſaſh-windows, and by painters for ſtopping up the crevices and clefts in timber and wainſcots, &c.

PUTTY ſometimes alſo denotes the powder of calcined tin, uſed in poliſhing and giving the laſt gloſs to works of iron and ſteel.

PYCNOSTYLE, in the ancient architecture, is a building where the columns ſtand very cloſe to each other; only one diameter and a half of the column being allowed for the intercolumniations.

According to Mr. Evelyn, the pycnoſtyle chiefly belonged to the Compoſite order, and was uſed in the moſt magnificent buildings; as at preſent in the periſtyle at St. Peter's at Rome, which conſiſts of near three hundred columns; and in ſuch as yet remain of the ancients, among the late diſcovered ruins of Palmyra.

PYGME, the ſame with cubit. See the article *Cubit*.

PYGMY, a perſon not exceeding a cubit in height.

PYLORUS, in anatomy, the right or lower orifice of the ſtomach, which is connected with and opens into the inteſtines. See *Stomach* and *Inteſtines*.

PYRAMID, in geometry, a ſolid ſtanding on a triangular, ſquare, or polygonal baſis, and terminating in a point at the top; or, according to Euclid, it is a ſolid figure, conſiſting of ſeveral triangles, whoſe baſes are all in the ſame plane, and have one common vertex.

Hence the ſuperficies of a given pyramid is eaſily found by meaſuring theſe triangles ſeparately; for their ſum added to the area of the baſe, is the ſurface of the pyramid required.

It is no leſs eaſy to find the ſolid content of a given pyramid; for the area of the baſe being found, let it be multiplied by the third part of the height of the pyramid, or the third part of the baſe by the height, and the product will give the ſolid content, as is demonſtrated by Euclid, lib. 12. prop. 7.

If the ſolid content of a fruſtum of a pyramid is required, firſt let the ſolid content of the whole pyramid be found, from which ſubſtract the ſolid content of the part that is wanting, and the ſolid content of the fruſtum, or broken pyramid will remain. See *Fruſtum*.

Every pyramid is equal to one third of its circumſcribing priſm, or that has the ſame baſe and height.

All pyramids are in a ratio compounded of their baſes and altitudes; ſo that if their baſes be equal, they are in proportion to their altitudes, and *vice verſa*.

Equal pyramids reciprocate their baſes and altitudes; that is, the altitude of one is to that of the other, as the baſe of the one is to that of the other.

PYRAMID, in architecture, a ſolid maſſive building, which from a ſquare, triangular, or other baſe, riſes diminiſhing to a vertex or point.

Pyramids are ſometimes uſed to preſerve the memory of ſingular events; and ſometimes to tranſmit to poſterity the glory and magnificence of princes. But as they are eſteemed a ſymbol of immortality, they are moſt commonly uſed as funeral monuments. Such is that of Ceſtius at Rome, and thoſe other celebrated ones of Egypt, as famous for the enormity of their ſize, as their antiquity. Theſe are ſituated on the weſt ſide of the Nile almoſt oppoſite to Grand Cairo: the baſe of the largeſt covers more than ten acres of ground, and is, according to ſome, near ſeven hundred feet high, though others make it ſix hundred, and ſome but little more than five hundred. The pyramid is ſaid to have been, among the Egyptians, a ſymbol of human life, the beginning of which is repreſented by the baſe, and the end by the apex; on which account it was, that they uſed to erect them over ſepulchres.

PYRAMIDAL, relating to a pyramid.

PYRAMIDALIA CORPORA, in anatomy, the two protuberances of the medulla oblongata. The ſpermatic veſſels are alſo by ſome authors thus termed.

PYRAMIDALIS, in anatomy, a ſmall muſcle in the abdomen lying in the lower part of the rectus. It has its name from its figure, and its origin from the margin of the os pubis, with a broad fleſhy head, whence it grows gradually narrower, till it ends in a ſmall round tendon in the linea alba, ſometimes almoſt at the navel. This muſcle is ſometimes ſingle, ſometimes it has its fellow, and in ſome ſubjects they are both wanting.

PYRAMIDALIS is alſo the name of one of the dilatores, or muſcles which ſerve to turn up the noſe. This muſcle riſes at the foot of the noſe, and is uſually continuous with the frontalis. It deſcends along the ſide of the noſe, where it is by degrees a little expanded. It is inſerted into the alæ of the noſe, and often ſends down it fibres as far as the upper lip.

PYRAMIDOID, the ſame with the parabolic ſpindle.

* PYRAMUS, in fabulous hiſtory, a youth of Babylon, who being in love with Thiſbe, a beautiful nymph, and his neighbour, diſcovered the means of converſing with her through a chink in the wall, and thus eluded the vigilance of their parents, who diſapproved their paſſion. But at length, being tired of this reſtraint, they reſolved to ſteal by night from home, and to meet in the fields under a mulberry-tree, that grew by the ſide of a murmuring brook. Thiſbe arrived firſt at the place, when a lioneſs, beſmeared with blood, came to drink at the neighbouring ſpring, which Thiſbe ſeeing, ſought for ſafety in flight; but dropping her veil, it was found by the beaſt, who tore it with her bloody jaws. Pyramus at length arrived, obſerved the prints of the ſavage feet, and finding the torn and bloody veil, plunged his ſword into his body, when the blood ſtreaming like a fountain from the wound on the mulberry-tree by which he ſtood, the berries, which were before white, were ſtained, and turned to a purple hue. Thiſbe at length returned, ſaw the beloved body, embraced it in her arms, beheld him open his eyes, and expire: then ſeeing her veil and the ſheathleſs ſword, ſhe plunged it in her boſom, and accompanied him in death.

PYRENOIDES PROCESSUS, in anatomy, a proceſs of the ſecond vertebra of the neck, called alſo odontoides, and dentiformis.

PYRETICS, medicines good againſt fevers. See *Fevers* and *Febrifuge*.

PYRIFORMIS, in anatomy, a muſcle of the thigh, receiving its name from its figure, which reſembles that of a pear. It riſes thick from the lower part of the os ſacrum, where it is joined to the ileum; from thence it runs tranſverſely towards the joint of the hip, and terminates in a ſhort tendon, which is inſerted in the middle of the internal labium of the upper edge of the great trochanter, by two or three branches.

PYRITES, in natural hiſtory, a claſs of compound inflammable metallic bodies found in detached maſſes, but of no determinately angular figure. See *Coperas*.

PYROMANCY, a kind of divination by means of fire. The ancients imagined they could foretel future events, by inſpecting fire and flame; and to this end, they conſidered its direction, which way it turned: ſometimes they added other matters to the fire, ſuch as a veſſel full of urine, having its neck bound about with wool, watching narrowly on which ſide it burſt, and thence taking their augury: ſometimes they threw pitch on it; and, if it took fire immediately, they eſteemed it a good augury.

PYROTÉCHNY, the art of fire, or a ſcience which teaches the management and application of fire in ſeveral operations. Pyrotechny is of two kinds, military and chemical: military pyrotechny is the doctrine of artificial fire-works and fire-arms, teaching the ſtructure and uſe of thoſe uſed in war, the attacking of fortifications, &c. as gun-powder, cannons, bombs, granadoes, carcaſſes, mines, fuſees, &c. and thoſe made for amuſement-ſake, as rockets, ſerpents, &c.

PYRRHICHIUS, in the Greek and Latin poetry, a foot conſiſting of two ſyllables, both ſhort, as *deus*.

PYRRHONIANS, PYRRHONEANS, or PYRRHONISTS, a ſect of ancient philoſophers, ſo called from Pyrrho, a native of Elis, in Peloponneſus. The opinions of theſe philoſophers, who were alſo called Sceptics, terminated in the incomprehenſibility of all things, in which they found reaſon for both affirming and denying: accordingly they ſeemed, during their whole lives, to be in ſearch of truth, without ever acknowledging that they had found it: hence the art of diſputing upon all things, without ever going further than ſuſpending our judgment, is called Pyrrhoniſm. Pyrrho maintained that life and death were equally indifferent; and he is charged with teaching, that honour and infamy, that juſtice and injuſtice of actions, depended ſolely on human laws and cuſtoms; and, in a word, that there is nothing in itſelf honeſt or diſhoneſt, juſt or unjuſt: an abominable doctrine, that opens the way to all manner of crimes.

PYTHAGOREANS, a ſect of ancient philoſophers, ſo denominated from their being the followers of Pythagoras of Samos, who lived in the reign of Tarquin, the laſt king of the Romans, in the year of Rome 220; or, according to Livy, in the reign of Servius Tullius, in the year of the world 3472.

Pythagoras, from his extraordinary deſire of knowledge, travelled in order to enrich his mind with the learning of the ſeveral countries through which he paſſed. He was the firſt that took the name of philoſopher, that is, a lover of wiſdom, which implied, that he did not aſcribe the poſſeſſion of wiſdom to himſelf, but only the deſire of poſſeſſing it. His maxims of morality were admirable: for he was for having the ſtudy of philoſophy ſolely tend to elevate man to a reſemblance of the Deity. He believed that God is a ſoul diffuſed through all nature, and that from him human ſouls are derived: that they are immortal, and that men need only take pains to purge themſelves of their vices, in order to be united to the Deity. He made unity the principle of all things; and believed, that between God and man there are various orders of ſpiritual beings, who are the miniſters of the Supreme Being. He condemned all images of the Deity, and would have him worſhipped with as few ceremonies as poſſible. His diſciples brought all their goods into a common ſtock, contemned the pleaſures of ſenſe, abſtained from ſwearing, eat nothing that had life, and believed in the doctrine of a metempſychoſis.

Pythagoras made his ſcholars undergo a very ſevere noviciate of ſilence for at leaſt two years; and it is ſaid, that where he diſcerned too great an itch for talking, he extended it to five: his diſciples were therefore divided into two claſſes, of which the firſt were ſimple hearers, and the laſt ſuch as were allowed to propoſe their difficulties, and learn the reaſons of all that was taught them. The Pythagoreans, it is ſaid, on their riſing from bed, rouſed the mind with the ſound of the lyre, in order to make them more fit for the actions of the day; and at night reſumed the lyre, in order to prepare themſelves for ſleep, by calming all their tumultuous thoughts. The figurative manner in which he gave his inſtructions, was borrowed from the Hebrews, Egyptians, and other orientals. Some think he derived his philoſophy from the books of Moſes, and that he converſed with Ezekiel and Daniel at Babylon: but this is mere conjecture.

Some authors ſay, that he left nothing in writing; but Laertius and others attribute ſeveral treatiſes to him. His golden verſes, attributed by ſome to one of his diſciples, are allowed to be an exact copy of the ſentiments of that Divine

Philoſopher, from whoſe ſchool proceeded the greateſt philoſophers and legiſlators.

PYTHIA, in antiquity, the prieſteſs of Apollo at Delphi, by whom he delivered oracles: ſhe was thus called from the god himſelf, who was denominated Apollo Pythios, from his ſlaying the ſerpent Python. This prieſteſs was to be a pure virgin: ſhe ſat on the lid of a brazen veſſel mounted on a tripod or three-legged ſtool; and thence, after a violent enthuſiaſm, delivered her oracles in a few ambiguous or obſcure verſes, or in a ſhort ſentence in proſe. See *Oracle*.

PYTHIAN GAMES, in antiquity, ſolemn games celebrated near Delphi, in honour of Apollo, in remembrance of his having killed the ſerpent Python. Theſe were held every two years, about the month Elaphebolion, which anſwered to our February. The celebration of theſe games was attended with the Pythian ſong, in which was celebrated the fight of Apollo and the ſerpent. The victors were crowned with branches of laurel; though, at the firſt inſtitution, the crown was of beech-leaves.

* PYTHON, in fabulous hiſtory, a monſtrous ſerpent, produced by the earth after Deucalion's deluge. Juno being exaſperated at Latona, who was beloved by Jupiter, commanded this ſerpent to deſtroy her; but endeavouring to eſcape the monſter, ſhe fled to Delos, where ſhe was delivered of Diana and Apollo, the latter of whom at length deſtroyed Python with his arrows, in memory of which victory the Pythian games were inſtituted. Some mythologiſts maintain that the word Python ſignifies putrefaction, and that this fable ſignifies no more than that the noxious vapours and exhalations which aroſe from the earth after the deluge were diſpelled, and the air purified by the rays of the ſun.

PYXIDIUM, CUP-MOSS, in botany.

END OF THE THIRD VOLUME.